SHOOT, SHOVEL, AND SHUT UP:
AN ANALYSIS OF SEVERAL POTENTIAL MEANS OF ENDANGERED SPECIES PROTECTION IN AN AGRICULTURAL LANDSCAPE

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ABSTRACT

The purpose of this study is to examine the impacts that legislation protecting endangered species will have on agricultural practices in Saskatchewan. This project will focus on endangered species in pastureland. A second objective will be to provide alternative methods of achieving species protection other than those outlined in Bill C-65 of the Second Session of the Thirty fifth Parliament, the **Canadian Endangered Species Act** (the Bill), one of which alternatives will be the Saskatchewan **Wildlife Act** (the Sask. Act). Hyperbole and hysteria on both sides characterize the current debate about the effects of the Bill on farmers and ranchers in Saskatchewan. That the Bill could have affected farmer's and rancher's costs and thus management decisions is certain; as by received economic theory anything that affects an economic agent's costs or profits will affect that agent's decision making. This study assesses the extent of these costs by resorting to the price necessary to bribe farmers/ranchers to increase habitat.

The Bill's purpose is the protection of bio-diversity through the conservation of endangered species which is to be achieved by a species by species procedure which mirrors the one adopted by the United States under the **Endangered Species Act 1973** (the Act). This study's results suggest that the Bill and the Act share an institutional framework that is sufficiently similar to suggest that only a difference in the perception of the social costs of noncompliance would alter the results witnessed in the United States. That is, if Canada had enacted the Bill it appears that given the similarities between Canada's and the United States' systems of governing and law enforcement from a

decision maker's perspective that the apparent disregard for the Act in the United States might be expected to exist in Canada, unless Canadian's have a social cost structure that is different from the social cost structure of residents of the United States. The analysis of the survey results suggests that such a difference in social costs does not appear to exist. The study explores a system of more generally protecting habitat and concludes that in order to do so effectively will require the expenditure in Saskatchewan of between twenty and forty million dollars per year on the part of the government. Effective habitat protection is also going to require the passing of legislation granting a Minister of the Crown discretionary authority to determine what should be protected where. Accompanying this discretion legislative action is also going to be necessary to change public interest standing and intervenor rules. Frivolous and vexatious actions against the Minister should be controllable through legislated solicitor client cost awards, an award were the unsuccessful litigant pays the successful litigants entire legal bill.

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CHAPTER ONE

INTRODUCTION

1.1 The Biodiversity Crisis

Society faces a crisis of extinction of flora and fauna species. The consensus amongst biologists seems to be that a principle reason that plant and animal species are being driven to extinction because they are running out of habitat (See for example Mann and Plummer (1996), Clark, Reading and Clarke (1994), or **Canadian Biodiversity Strategy**). That is, plants and animals are competing with humans for the land where their habitat is found. This has led biologists and conservationists to argue that the current epidemic of extinctions that the planet faces is of a different character than the extinctions of prehistory like that of the dinosaurs (See for example Mann and Plummer (1996), or Clark, Reading and Clarke (1994)). Rather than being the result of alterations of the environment due to a natural phenomenon, like an ice age, they are seen as due to human pressure on other species caused by competition for space.

For example, consider bison that were all but driven from the North American Great Plains for the benefit of settlers who would be spared having to put up with millions of large wild ungulates roaming through their fields on a whim. The current spate of extinctions, estimates of which run as high as in excess of one hundred species per day (Clark, Reading and Clarke(1994)), is thus seen to be based largely in the notion that endangered species do not compete well with humans for access to the resources they need to survive. Swanson argues that humanity now has sufficient control over the

biosphere that: "human decisions on resource allocation will determine which life forms will continue to exist into the future" (Swanson (1994): 819).

In much more dramatic language Mann and Plummer have expressed a similar idea as follows:

> In the role of modern Noahs, we face momentous choices. We want to load endangered species on our ark, but the task must compete for scarce resources with other worthy projects. Because we are acting from human impulse rather than on the orders of a Supreme Deity, we don't have blueprints for our conduct or, for that matter, the ark we are trying to build. We don't even know the numbers of potential passengers, although we know that whatever ark we choose to build will be unable to accommodate everything. What will be saved and what will be left behind? There is no automatic answer.
>
> Few individual situations are foreordained. If the nation wants to, it can buy outright the pine barrens and oak savanna needed by the Karner Blue butterfly; or it can build a new hospital to serve the Choctaws who live on the wrong side of the Sans Bois Mountains in Oklahoma; or it can dismantle the dams that block full recovery of the snail darter. It can do any of these things, but not all of them at once. Each of these actions diminishes our capacity to take other worthwhile actions. It is easy to say that society should extract money from developers and give it to black-capped vireos that need protection. But it is not possible to do this and simultaneously ensure that good housing is available and affordable to everyone. Or good health care, for that matter, or a good education. Embracing the goal of saving biodiversity and the goals of providing housing, health care and education, as well as the many other goals we have taken up during the past two hundred years, makes our choice difficult. (Mann and Plummer (1996): 212-13)

Thus, the problem appears to be one, from an anthropocentric view, of allocating scarce resources, particularly land, between competing ends. Baring some revolutionary changes, in the case of land, this would amount to choosing between non-human habitat and the countless human demands upon land for food, habitation and supporting infrastructure facilities. If this allocation does not insure that sufficient other species'

habitat exists, to maintain some biologically essential number of species at risk, neither does it maintain a level of biodiversity that is sufficient to guarantee sustainable human existence (Mann and Plummer (1996)). This suggests that the endangered species problem is a problem that economics can shed some light upon.

1.2 Legislative Intervention as a Cure for the Crisis

In response to this problem the Government of Canada in the Second Session of the Thirty-fifth Canadian Parliament introduced Bill C-65 of the session entitled, the **Canadian Endangered Species Act** (Bill C-65 45 Elizabeth II, 1996-97) (hereinafter the Bill). The Bill died on the order paper with the calling of the 1997 Canadian federal election. The concept of endangered species protection legislation has subsequently been the subject of numerous consultations between the federal and provincial governments and stakeholder groups. These consultations may well have been prompted by the large dissatisfaction expressed with the Bill to the House of Commons Standing Committee on Environment and Sustainable Development that held hearings across the country with respect to the Bill following its first reading (Archive of Committee Evidence). A great deal of the discontent that surrounds the Bill appears to stem from the perceived similarity between the Bill and the United State's **Endangered Species Act**, 1973 (16 USC ss. 1531-1544) (hereinafter the Act) that is advanced, particularly in the renewable and non-renewable resource extraction sectors as having been of limited effectiveness

since it became law in 1973. Consider for example the testimony of Mr. Jim Turner, Director, Canadian Cattlemen's Association:

> The legislation before this committee represents a U.S.-type approach to endangered species. It is questionable how effective this approach has been and at what cost it has been arrived at. It relies heavily on regulation and enforcement and contains very little to encourage voluntary cooperation and partnerships. In our view, the legislation in its current form will actually create conflict between landowners and conservation groups and will be detrimental to the future of wildlife on private lands. (Archive of Committee Evidence, Meeting 49, 19 November 1996)

On April 11, 2000 the federal government introduced a substantially revised version of the Bill into the House of Commons, **The Species at Risk Act** (Bill C-33 of the Second Session, Thirty-sixth Parliament 48-49 Elizabeth II, 1999-2000). This Bill died on the order paper with the calling of the 2000 Canadian Federal Election. Subsequently, Bill C-33 was reintroduced with some minor amendments as **The Species at Risk Act** (Bill C-5 of the First Session of the Thirty-seventh Parliament 49 Elizabeth II, 2001) on February 2, 2001. Bill C-5 passed on second reading and was referred to the Standing Committee on Environment and Sustainable Development on March 20, 2001.

The Bill in its preamble sets out the following reasons for protecting endangered species:

> Recognizing that
>
> Canada's natural heritage is an integral part of our national identity and history,

wildlife, in all its forms, has value in and of itself and is valued by Canadians for aesthetic, cultural, spiritual recreational, educational, historical, economic, medical, ecological and scientific reasons

Canadian wildlife species and ecosystems are also part of the world's heritage and the Government of Canada has ratified the United Nations Convention on the Conservation of Biological Diversity,

providing legal protection for wildlife species at risk will in part meet Canada's commitments under that Convention,

the Government of Canada is committed to conserving biological diversity and to the principle that, if there are threats of serious or irreversible damage to wildlife species, cost effective measures to prevent the reduction or loss of the species should not be postponed for a lack of scientific certainty,

responsibility for the conservation of wildlife in Canada is shared among the various levels of government in this country and it is important for them to work together to pursue the establishment of complementary legislation and program for the protection and the recovery of species at risk in Canada,

all Canadians have a role to play in the conservation of wildlife in this country, including the prevention of wildlife species from becoming extirpated or extinct,

the conservation efforts of individual Canadians and communities should be encouraged and supported and their interests should be considered in developing and implementing recovery measures,

the role of the aboriginal people in Canada, and of the wildlife management boards established under aboriginal land claims legislation, in the conservation of wildlife in this country, are especially important, and

knowledge of wildlife species and ecosystems is critical to their conservation,

The aims that the Bill advances and the accompanying benefits that the preamble suggests that Canadian society will receive from the Bill would only have been available,

if the Bill had become law. These benefits will only become available if the Bill would have proven effective in protecting and enhancing biodiversity. The challenge is to ascertain the likely effectiveness of the Bill, or any other piece of legislation, prior to its enactment. As economic theory suggests that decision making should remain constant over constant institutional structures, the likely effectiveness of the Bill will be examined in light of the American experience under the Act. This will require ascertaining the effectiveness of the Act and its fitness as a model for the Bill.

1.3 Organization of the Study

It will be argued herein that the mere presence of an endangered species problem, in Canada, is an indication of institutional failure. It will be hypothesized that the Bill will not prove effective in reversing biodiversity loss. It will also be argued that the hypothesized failure of the Bill is a result of the manner that it addresses the institutional failure.

These arguments will be made by examining the policies, in the developed North American economies, that affect habitat preservation, either positively or negatively. Once an appreciation of the policies is attained the structures used to implement those policies and the incentive structure that such institutions put in place can be examined. It should then be possible, using economic theory and the results of the survey of Saskatchewan cattle producers' attitudes, to ascertain the likely effectiveness of new institutions to achieve their policy goals and to assess their associated costs.

Chapter Two will examine the nature of the biodiversity crisis and attempts that have been made to address it. Chapter Three will then examine the economic theory as it relates to the biodiversity crisis. Chapter Four will look at the manner in which the United States has chosen to address the problem, then draw upon economic theory to explain the problems inherent in the American approach. Chapter Five will then test the appropriateness of using the American Act as a model for the Canadian Bill. Chapter Six highlights the survey, setting out how it was conducted and the results obtained from questioning the attitudes of cattle producers. Chapter Seven looks at policy instruments other than prohibitive policy to affect improvements in biodiversity, and will also examine the two subsequent Bills brought before the House of Commons to address the endangered species problem. Chapter Eight quantifies the costs associated with increasing the amount of habitat available in the agricultural portion of Saskatchewan to the twelve percent of land mass suggested by the World Commission on Environment and Development. Finally, Chapter Nine sets out the conclusions, limits and recommendations of the study as well as suggesting areas where further research is necessary.

1.4 Scope of the Study

This study presumes that the proposition that globally biodiversity has fallen to a point which renders the sustainability of humanity's current standard of living

problematic. That is, it accepts as given the premise that the ability of the environment to absorb and render harmless the wastes of our industrial society has been compromised to the point that it is questionable whether or not the current equilibrium between man and his environment can be sustained. This study further presumes that the increasing rate of extinction of non human species is somehow correlated with declining biodiversity and as such that fact that species are at risk of extinction or of extirpation from a region are indicative of a want of the biodiversity necessary for the continued existence of modern industrial society. From the two previous propositions flows a third; that is, that a slowing of the rate at which non human species go extinct or are extirpated from a region suggests the presence of a level of biodiversity that is more likely to be able to ensure the continued existence of our industrial society. Finally, the study rests on the premise that the majority of the species at risk are at risk due to habitat loss and fragmentation and thus concerns itself with means to protect and restore habitat. This approach means that other threats to species at risk such as climate change, the presence of pollutants in the environment, increased predator populations, ecosystem transition, like the southern encroachment of the aspen parkland into the North American plains and over utilization by humans will be largely ignored.

The survey that serves as the source of most of this study's conclusion was conducted solely among Saskatchewan cattle producers and as such any attempt to draw inferences respecting the wider prairie and Canadian rural populations should be done with care. However, an Environics survey of Canadian rural residents done subsequent

to the survey seems to support the proposition that the findings of the survey may be representative of rural Canadian residents generally (Environics (2000)).

Given the limitations of the survey, the study speaks, in the main, of the agricultural region of Saskatchewan specifically and the agricultural region of the northern North American plains more generally. Thus, the ecosystems to which the study has clearest implications are those of the short grass prairie, of the North American plains. Therefore, the species at risk of extinction or extirpation to which the study most directly applies are those of that region.

The species at risk of extinction or extirpation in the short grass prairie of the North American plains include plants, birds, mammals, amphibians and reptiles. These species are at risk from a variety of reasons, including but not limited to: habitat loss and habitat fragmentation, that is, conversion of native grass to crop production; pesticide use, either directly through poisoning of the species or indirectly through depletion of the species food sources; predation, often caused by loss of cover to grazing; acidification of marshes due to acid rain (SERM (2001), Watson and Russell (1997) Caceres and Pybus (1997), Petersen (1997), Wagner (1997), Prescott (1997), RENEW (1999)). A far from exclusive list of the species at risk of extinction or extirpation from the causes listed above and others would include: hairy prairie clover, slender mouse-ear cress, piping plovers, Sprague's pipit, sage grouse, greater prairie chicken, burrowing owl, swift fox, wolverine, northern long eared bat, black tailed prairie dogs, black footed ferrets,

northern leopard frog and the prairie rattlesnake (SERM (2001), Watson and Russell (1997) Caceres and Pybus (1997), Petersen (1997), Wagner (1997), Prescott (1997), RENEW (1999)).

Within this context habitat in this study is taken to be landscape in which the species at risk of extinction or extirpation proceeds through its life cycle. For any particular species at risk of extinction or extirpation a particular sort of landscape is better or poorer habitat for that species depending upon how readily the species thrives in the landscape. Accordingly, a particular landscape can be better or poorer habitat generally depending upon how many species at risk of extinction or extirpation can thrive throughout their life cycles within it. This study, therefor views habitat as graduating from cities, the poorest form of habitat, to short grass prairie as it existed prior to European contact, the best form of habitat. Thus, to tear up a street and seed it to wheat is to improve the landscape as habitat, as is the transformation of a wheat field to a brome or crested wheat grass pasture, as is the seeding of such a pasture to native grasses a habitat improvement. Each of these transitions of the landscape is seen as a habitat improvement because each transition improves the probability that a greater number of the species at risk of extinction or extirpation within the region will be able to thrive throughout their entire life cycle within that landscape. Thus, given the premises, highlighted above, that underlie this study, improvements in habitat that increase endangered species' probability of avoiding extinction or extirpation are indications of

improvements in the biodiversity of the region and therefore increase the likelihood that our society will continue.

Finally, the study is limited solely to privately held land. While there are a myriad of interesting questions about endangered species and public lands they are not addressed here. This study analyzes the potential effectiveness of the Bill and several other policy instruments to increase the quality of habitat for endangered species. In doing this the study adopts the effect these policies could have on an individual economic agent acting out of self interest, within the current institutional structure and the institution structure that would of existed had the Bill become law. This analysis lends itself to addressing questions of compliance with laws in the face of actual or perceived costs being imposed by a change in the law. Questions like how much if any public land should be sold to private individuals, or what sort of conditions should be placed on pasture leases, or whether or not the crown should allow crown land to be farmed are more amenable to examination through public choice theory than the methodology adopted here.

CHAPTER TWO

THE NATURE OF THE CRISIS AND ATTEMPTS AT ADDRESSING THE CRISIS

2.1 How the Crisis Arose

Swanson argues that humanity now can essentially control nature (Swanson (1994)). While the roots of Swanson's claim lie deep in antiquity the readily apparent manifestation of this ability is a post Industrial Revolution phenomena. The transition from the hunter-gather societies of the Stone Age to the world we witness in today's Information Age is the story of humanity's ever increasingly successful attempts to first exploit nature, then to harness nature and finally to control nature. It is simultaneously the story of mankind's ever expanding technological ability. Finally, it is also the story of our increasing, in material terms, standard of living, and the accompanying increases in life expectancy and population.

The often cited rise in atmospheric carbon dioxide levels is a post sixteenth century phenomenon. The rise of commercial agriculture from subsistence agriculture is also a modern age phenomenon. The scientific revolution (Kealey (1996)) and the liberal enlightenment (North and Weingast (1989)) transformed England from a feudal to industrial society, with the rest of the western world following closely behind (Kealey (1996)). With industrialization came a marked increase in material wealth, and in

population (Czech and Krausman (2001)). This, of course, led to increased demand for food and the expansion of land dedicated to agricultural production, and ultimately to decreased habitat for non-human species (Czech and Krausman (2001)). Concern about loss of habitat, in North America, goes back at least until 1933 when Leopold obliquely cites it as a concern in game species management (Leopold (1933)). Clark, Reading and Clarke and Czech and Krausman argue that this loss of habitat has lead to a level of non-human species extinction that is apparently unprecedented without an accompanying cataclysmic event such as an ice age (Clark, Reading and Clarke (1994), Czech and Krausman (2001)).

2.2 Why Humanity Might Care About Biodiversity

The **Canadian Biodiversity Strategy** (the Strategy) makes the following observation:

> Biodiversity supports human societies ecologically, economically, culturally and spiritually. Despite its importance, however, ecosystems are being degraded and species and genetic diversity reduced at an alarming rate due to the impact of our growing human population and increasing resource consumption rates. The global decline of biodiversity is now recognized as one of the most serious environmental issues facing humanity (p. 6).

The Strategy argues that humanity should be concerned with diminishing biodiversity for at least four reasons. The concerns appear to break into two broad categories. They can be ecocentric or anthropocentric. That is the concerns can be either that the ethics of driving other species into extinction is questioned, or the wisdom of

driving another species into extinction is questioned because of the potential adverse effects that humanity might face because of the extinction.

The first class of concerns argues that humanity cannot morally drive another species to extinction. That is, the proponents of the argument develop an ethical system in which other living organisms are granted a right to survival and it thus becomes immoral to force another species into extinction, purely for human convenience (Solow and Polasky (1999)). The Strategy makes that argument as follows:

> Many Canadians believe that each species has its own intrinsic value, regardless of its value to humanity, and that human society must be built on respect for the life around us. They believe that we should conserve biodiversity for its own sake, regardless of its economic or other value to humans (p. 14).

The other class of arguments takes a much more anthropocentric point of view. One principle concern of this class is that a potentially valuable life form may become extinct before humanity can exploit it. Hence, for example pharmaceutical companies canvas the world seeking traditional remedies and testing the ingredients for medicinal value (Solow and Polasky (1999)). The other principle concern of this class of argument is that the environment acts as a sink for the wastes humans produce. An ecosystem's resilience, its ability to recover from the insult that industrial society level against it, is thought to be a function of its diversity (Mann and Plummer (1996)). That is, the more diverse an ecosystem the more resilient. Endangered species, in this context, are a proxy for biodiversity. Much as the death of caged canaries were once used to indicate an air quality, in coal mines, harmful to human miners, this argument runs that as more and

more species become extinct, the level of biodiversity must also fall, perhaps even ultimately to a state incapable of supporting human existence. Unfortunately, it appears that humanity has been trying rather hard to kill off the canaries.

Again, the Strategy recognizes this class of argument of endangered species protection when it notes:

> Failing to conserve biodiversity puts future options, flexibility and economic opportunities at risk and passes enormous costs onto future generations. Conserving biodiversity is an investment in the future and makes good business sense (p. 14).

Thus whether a society chooses to act upon ethical grounds, or the preservation of the spiritual and cultural or intrinsic value of other species, or the more crass anthropocentric advantages that accrue from biodiversity, it would seem that a society should be able to build a fairly broad consensus respecting the need to protect biodiversity. This is, in fact, what Canadian society has done. There was not a single witness before the House of Commons Standing Committee on Environment and Sustainable Development hearings into Bill C-65, who questioned the necessity of federal endangered species protection legislation (Archive of Committee Evidence). The vast majority of the witnesses lauded the government's initiative before setting out to argue that while the goal was laudable the implementation through Bill C-65 was in some manner or another flawed (Archive of Committee Evidence).

2.3 The Extent of the Problem

The Canadian Biodiversity Strategy suggests that the loss of species is, at the least, alarming:

> Despite the importance of biodiversity to humanity, we are currently witnessing a global biodiversity crisis. Ecosystem, species and genetic diversity are being reduced, largely by human activity, at an unnaturally high rate. It has been estimated that the current rate of global species extinction is 1,000 to 10,000 times greater than natural. Scientists estimate that upwards of 25 percent of the total number of species on Earth could vanish by the first decades of the next century. Forests, wetlands, lakes, coastlines and other natural areas are being altered by human activities, while genetic variation within species - including domesticated crops and animals - is decreasing. These changes threaten our ecosystems and the ecological services that make life on Earth possible (p. 15).

In more specific terms Clark, Reading and Clarke aver that the planet faces an extinction explosion of historic proportions. In what they claim to be conservative projections of species loss, they cite estimates of losses in the neighborhood of ten percent of the planet's biodiversity from 1994 levels being likely to occur as early as about 2005 and almost certain to occur by roughly 2025. This would suggest species losses at a rate of one hundred or more species per day, worldwide. They then turn to the United States predicting, in 1994, that 675 plant species might become extinct in the United States before the year 2000 (Clark, Reading and Clarke (1994): 3). These were estimates, so what is the reality? The sad fact is that humanity really has very little idea of the number of species that currently exist or have existed (Czech and Krausman (2001): 11-14). As Professor Tom Herman, Head, Department of Biology, Acadia

University, observed into the hearings before the House of Commons Committee on Environment and Sustainable Development's hearings into Bill C-65:

> Well, clearly the first step in protecting endangered species is to identify them. How well are we doing? How many endangered species are there? I have no idea, quite frankly, but if you look at the COSEWIC list, it can be very misleading. How well do we know our biodiversity in general? I think my colleague from New Brunswick has more to say on that (Archive of Committee Evidence, Meeting 58, 05 Dec 1996).

At the same meeting, Dr. Don McAlpine of the New Brunswick Museum, observed:

> We must also recognize that in the short term the task of enumerating and describing species is too great and the available expertise too little to accomplish anything near the full census of Canadian species we need now (Archive of Committee Evidence, Meeting 58, 05 Dec 1996).

Considering these limitations, Clark, Reading and Clarke further claim that about one-third of fresh water fish species in the United States are endangered due to habitat degradation. According to these authors, up to 3000 species may be candidates for listing. Listing is the inclusion of a species on the list of endangered and threatened species that the Act mandates be maintained. Listing is also the first step in the process that allows a species the protections the Act legislates for endangered species. They further aver that out of that 3000 as many as 300 may already be extinct or may become extinct prior to listing because of the resource constraints faced by the Fish and Wildlife Service, the American Government agency principally charged with implementing and enforcing the Act. Finally they observe that fewer than one-half dozen endangered species have recovered under the Act (Clark, Reading and Clarke (1994): 3).

An examination of the listings under the Act reveal that between 1994 and 2000 that 458 species have been listed , and 28 delisted between 1973 and 2000. The Fish and Wildlife Service gives as the numbers and reasons for delisting: eleven species are said to have recovered, seven have become extinct, four each were the result of taxonomic change or the discovery of new information, while one species each was delisted as the result of erroneous data and an amendment to the Act (US Fish and Wildlife Service). While these listing numbers suggest that Clark, Reading and Clarke's estimates may well be high. The mere fact that listings continue at rates an order of magnitude greater than delisting suggests that the problem continues to be exacerbated, although perhaps less dramatically than Clark, Reading and Clarke feared. Similarly, in Canada as in the United States, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) list of species at risk in Canada continues to expand (Environment Canada). Thus, while estimates derived through the use of species area curves may over dramatize the extent of the problem, an examination of listings makes it quite clear that the problem is not going away.

While Mann and Plummer cast some doubt upon the use of a species area curve, a hypothesis that the number of species that a particular area of land can house is a function of the area in the form S=cAz, where S is the number of species, c and z are constants and A is land area, to derive predictions of the likelihood and rates of extinction, the predominant methodology for deriving such estimates, they conclude:

> We face, in sum, not the onrushing, all-destroying wave of extinction described by S=cAz, but an immense aggregation of small,

> individual situations that is not reducible to a simple equation. These situations are nudging a large (though exactly how large is unknowable) fraction of North American biodiversity down the path toward extinction. Predicting the exact time of arrival is less important than recognizing our direction of travel and that we are picking up speed now. In other words, our biodiversity problem is better thought of in terms of endangerment today than extinction tomorrow. Although the latter will surely occur if the former is not controlled, we have time for considered action, not panicky reaction (Mann and Plummer (1996): 79-80).

This clearly reinforces the notion that humanity faces a grave situation that continues to be exacerbated in spite of the actions thus far taken to alleviate it.

That this crisis is largely the result of habitat loss is mainly uncontested. The Globe and Mail of February 24, 1999, suggests that 80% of species at risk in Canada are at risk because of habitat loss. This implies successful attempts to limit species loss will ultimately depend upon some form of habitat protection and thus affect land use policies. It also implies that humanity should attempt to cease the over exploitation of species that account for the remaining 20% of the threatened species.

2.4 Addressing the Problem

As early as the 1940's Aldo Leopold saw the need to address what he labeled the conservation problem through the development of a land ethic. Leopold described this ethic in the following terms:

> All ethics so far evolved rest upon a single premise: that the individual is a member of a community of independent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him also to co-operate (perhaps in order that there may be a place to compete for).

> The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively, the land. (Leopold (1966): 219)

Lest the impression is left that Leopold was naïve it should be recalled that later in the same work he observed:

> By and large, our present problem is one of attitudes and implements. We are remodeling the Alhambra with a steam-shovel, and we are proud of our yardage. We shall hardly relinquish the shovel, which after all has many good points, but we are in need of gentler and more objective criterion for its successful use. (Leopold (1966): 241)

This implies several things about our society. Firstly, Leopold implies that we live in a society that attempts to control nature, an attempt that Swanson argues has been successful (Swanson (1994)). Secondly, the idea that progress can be measured as some form of a society's ability to control nature is implicit in Leopold's observation. Thus the crux of the problem becomes how, as a society that holds these conceptions, do we arrive at the "gentler and more objective criterion"? That is how do we move from control of nature to some form of co-existence with nature.

This task is exacerbated by the near reverent attitude that western society possesses respecting property ownership. As Machiavelli observed:

> Nonetheless, the prince must make himself feared in such a way that, if he does not obtain love, he may escape hatred; because being feared and not hated can go together very well; which he will do always when he keeps himself from this citizens' and his subjects' possessions, and from their women: and even when he might have need to proceed against someone's blood, he should do it when there might be convenient justification and manifest cause; but above all, he should abstain from other people's

> things; because men sooner forget the death of the father than they do the loss of patrimony (Machiavelli (1997): 62).

This respect for property is so pervasive in western society that Locke dedicates an entire chapter, chapter five, of **The Second Treatise of Government**, to "shew how men might come to have a property in several parts of that which God gave to mankind in common, and that without any express compact of all the commoners." (Locke (1956): 15) In other words, the sanctity of private property in western culture possesses an inertia that predates the Glorious Revolution. Thus, the land ethic that Leopold suggests as the solution to the problem must overcome, particularly in the western world, the cultural inertia that the owner of property, both real and personal, is free to do with the property what the owner will, subject only to the rights of the other property owners to the use and enjoyment of their property.

The question must surely become: how is this change in societal attitudes to be accomplished? The **Canadian Biodiversity Strategy** observes:

> It has been demonstrated that education is the most cost-effective means of producing long-term social change. Education allows individuals to make lifestyle and consumption decisions that are sensitive to biodiversity conservation and sustainable use objectives.
>
> Biodiversity education and community awareness should be strengthened in a variety of ways to reach people across the country. Biodiversity themes should be enhanced in the curricula of formal education systems, as well as in non-formal settings such as museums, zoos, aquariums, botanical gardens, nature centres and parks. Awareness-raising and education could also take place through such means as the mass media, films or interactive computer programs.

> A significant portion of Canada's biodiversity exists on private land. Education programs developed for land-owners and local communities will need to be tailored to the needs of these vital audiences (p.67).

Again, Leopold addresses the question, saying:

> Conservation is a state of harmony between men and land. Despite nearly a century of propaganda, conservation still proceeds at a snail's pace; progress still consists largely of letterhead pieties and convention oratory. On the back forty we still slip two steps backward for each forward stride.
>
> The usual answer to this dilemma is 'more conservation education.' No one will debate this, but is it certain that only the *volume* of education needs stepping up? Is something lacking in the *content* as well?
>
> It is difficult to give a fair summary of its content in brief form, but, as I understand it, the content is substantially this: obey the law, vote right, join some organization, and practice what conservation is profitable on your own land; the government will do the rest.
>
> Is not this formula too easy to accomplish anything worthwhile? It defines no right or wrong, assigns no obligation, calls for no sacrifice, implies no change in the current philosophy of values. In respect to land-use, it urges only enlightened self-interest. Just how far will this education take us (Leopold (1966): 222-3)?

Both Leopold and the Strategy see education as critical to effecting change over the long term. Both however note a need to alter the message. The mere existence of the biodiversity problem suggests that society's current educational programs are not sufficient to advance the land ethic and thus allow society to avail itself of Leopold's solution. This leads to the question: how is society to accomplish this task?

North defines institutions as: "the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction" (North

(1990b): 3). The land ethic that Leopold proposes is, in the vernacular of new institutional economics, an institution. Thus, if the solution to the problem is to adopt Leopold's land ethic the institutional structure is going to have to change. Assuming that society wishes to adopt this solution the question then distills to how does a society affect an institutional change? How do we change the "humanly devised constraints that shape human interaction"?

The Strategy envisions an educational system, albeit a modified education system, as the means by which, in the long run, humanity will be able to alleviate, if not rectify, the biodiversity problem. While Leopold acknowledges the importance of education he cast doubt on the ability of enlightened self-interest to be completely successful. Implicit in these observations is the premise that society's decision makers currently lack all of the information necessary to make decisions, based upon their self interest, that lead to biologically sustainable outcomes. Thus, in the parlance of economics what both the Strategy and Leopold are referring to is informational problems; both a fundamental lack of information and an asymmetric distribution of the existing information. While education can cure the latter, the former is the providence of research. Thus Leopold's allusion to education as too easy an answer, coming too cheaply and Dr. Don McAlpine's comments above (Archive of Committee Evidence, Meeting 58, 05 Dec 1996) may have merit.

By received economic theory it is axiomatically true that if the information problems are solved, self-interest can lead to the adoption of something like the land ethic

Leopold advocates. Unfortunately, for at least two reasons, this does not end the problem. First should the more pessimistic estimates of species loss prove accurate the development of such an ethic through fully informed self-interest may prove too slow a process to avoid catastrophe. This suggests a need for interim measures. Secondly, relying on self-interest requires that current decision makers are truly concerned about the living conditions, not only of their grandchildren, but also of future generations. To prove effective in addressing the biodiversity problem this concern will need to be translated into the adoption of appropriate discount rates for the utilization of natural capital. Should this not be the case, biodiversity protection will have to be affected through some other means. Thus, some mechanism, other than pure self-interest, is going to have to be utilized to effect the institutional changes necessary to insure biodiversity protection, at least in the interim.

If individuals will not voluntarily act to effect the institutional change necessary to provide biodiversity protection, then some form of coercion is going to be necessary to override economic agents' perceived self-interest. In the western world were the state maintains a monopoly on the legal use of coercion, intervention by the state is necessary. Again, in the western democracies attempts at conserving biological diversity are going to require legislative initiatives.

2.5 The North American Legislative Response

This section of Chapter 2 will concern itself with the nature of the legislative initiatives that have been taken to protect biodiversity. It will be argued that this approach was effective against the biodiversity threat inherent in the over harvest of game animals and birds that commenced in the late nineteenth and early twentieth centuries. It will be further argued that against the more insidious problems of habitat loss and degradation, that command and control regulation has not proved as effective.

2.5.1 The United States' Response

The Endangered Species Act, 1973 (16 USC ch. 35) (hereinafter the Act, a copy of which is attached as Appendix A) is the legislation which protects endangered species in the United States. It is legislation with few friends. It is decried by landowners who see it as expensive and overly intrusive (see for example Mann and Plummer (1996)), and by conservationists who see it as ponderous and of questionable effectiveness (see for example Clarke, Reading and Clark (1994)). Whatever it faults may be, the Act is the culmination of over a century of federal legislative intervention in the United States for the protection of nonhuman species that most visibly began with the creation of the first national park in 1872 (Anderson and Leal (1997)).

The first step on this highway was the creation of the national parks and of the National Park Service. The first of the national parks was Yellowstone, created in 1872. This was done by the second session of the 42nd Congress by the passing of the **Yellowstone Park Act** (c. 24, 17 STAT., 32 and 33). Anderson and Leal (1997) argue that the principle motivation behind the creation of Yellowstone and all of the other late 19th century western national parks was the railroads seeking to increase passenger traffic by marketing the relatively pristine mountains, geysers and glaciers of the Rocky Mountain ranges to affluent urban tourists. Marketing the vistas to the affluent requires that the vistas be maintained, and as Anderson and Leal observed of the railroads: "They were profit motivated, but their actions resulted in the preservation of the cornerstones in our national park system"(Anderson and Leal (1997): 28).

If you protect where the species lives through the creation of national parks you ultimately provide some protection for the species. Actual protection of species themselves was undertaken to protect the interests of sport hunters (Czech and Krausman (2001)). It bears notice that even though Yellowstone became a de facto United States Federal Wildlife Refuge in 1894 principally to protect bison, (just as Afognak Island, Alaska was protected to conserve commercial salmon spawning grounds) protection of individual species lay largely with the state governments until 1900 (Czech and Krausman (2001): 16).

In the United States federal protection of endangered species essentially began as a response to the rapid decline of the passenger pigeon with the passage of the **Lacey Act** (1900, ch. 553, stat. 187), designed to allow the Secretary of Agriculture to adopt measures to protect game and other wild birds from interstate commerce (see Clark (1994): 19 and Czech and Krausman (2001) Chpt. 3). This was followed by the **Migratory Bird Treaty Act of 1918** (3 USC sec. 301) that implemented a treaty with Great Britain on behalf of Canada entered into in 1916. This Act was later amended to become the **Migratory Bird Conservation Act of 1929** (1929, ch. 257, stat. 1222), to include the then negotiated expansion of the treaty with Britain to include Mexico. The treaty was subsequently signed in 1932. These Acts were aimed at protecting migratory birds in North America (Clark (1994): 19-20 and Czech and Krausman (2001) Chpt. 3). These early pieces of conservation legislation were, by and large, attempts to facilitate sport hunting of waterfowl and upland game birds (Czech and Krausman (2001) Chpt. 3). In this regard, much of the support for this legislation came from hunter/conservation groups, like the Boone and Crockett Club, the Audubon Society, and The American Game Protective and Propagation Association (Czech and Krausman (2001) Chpt. 3).

The early 1960's saw a marked change in the philosophy driving conservation. As Clark observes:

> Slowly, political and public awareness of the growing problem of endangered species began to increase. The environmental activism of the early 1960's accelerated this growing awareness, and in 1964 the Department of Interior's Bureau of Sport Fisheries and Wildlife (now the U.S. Fish and Wildlife Service) formed the Committee on Rare and Endangered Wildlife Species. Based on the work of this committee, the

> Department of Interior published "Redbook-Rare and Endangered Fish and Wildlife of the United States-Preliminary Draft." This 1964 publication, more commonly known as the "Redbook," contained the first official listing of species the federal government considered to be in danger of extinction (Clark (1994): 20).

Two years later, Congress passed its first comprehensive endangered species legislation: the **Endangered Species Preservation Act of 1966**(80 Stat. 926). Though espousing the lofty goal of "conserving, protecting, restoring and propagating selected species of native fish and wildlife" (Section 2(a)), the 1966 Act did little except authorize efforts to acquire important habitat. Congress soon recognized the inherent weakness of this Act and replaced it with the **Endangered Species Conservation Act of 1969** (83 Stat. 275). This replacement Act extended protection to certain invertebrates, increased prohibitions on illegal trade, and began the process that culminated in the **Convention on International Trade in Endangered Species of Wild Fauna and Flora**, an international agreement aimed at halting trade in endangered species and their body parts (Clark (1994): 20).

One of the strongest voiced objections to the **Endangered Species Preservation Act** (the 1966 Act) was that while it required the federal government's development agencies such as the Army Corps of Engineers to be cognizant of the effects of their projects on endangered species, it really did not require them to do any thing beyond telling the Fish and Wildlife Service what they were doing. Thus, the perception was that the development agencies were proceeding with their own agendas with no real regard for endangered species, and that private agents were free to do whatever they wished.

The **Endangered Species Conservation Act** of 1969 (the1969 Act) did little to address these perceptions, and while it attempted to make the taking, particularly of endangered or threatened species unlawful, it also made some allowances for commercial interests, particularly furriers and trappers. Yaffe argues these concerns were driving forces behind the repeal of the 1969 Act and the enactment of the Act (Yaffe (1982): 32-57).

The Act in its present form is the culmination of over a century of United States Government legislative intervention to protect nonhuman species. It adopts a process, upon the species being listed that entitles a species to the protections under the Act, including habitat protection. Listing, occurs upon the ratification by the Secretary of Commerce or the Interior of the scientific determination by either the Fish and Wildlife Service or the National Marine Fisheries Service that the species' numbers are such that it falls within the statutory definitions of endangered. An endangered species is defined as:

> any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this chapter would present an overwhelming and overriding risk to man.

Once this occurs the species and its habitat, defined as being "critical to the species continued existence in the wild" (Act s. 3 (5)) are protected.

In the view of Mann and Plummer there is an additional philosophical change in the 1973 Act. This change was the abandonment of the notion of conservation where practicable in favor of the adoption of a perfect duty owed by humanity to biodiversity. As they observe:

> Whatever the cost-the Court[United States Supreme Court in Tennessee Valley Authority v Hill (98 S.C.R. 2279 (1978))] was saying something of almost embarrassing obviousness. By enacting a law that eliminated the practicable, Congress had with little discussion or debate created a perfect duty to biodiversity. Although Allen[the Audubon Society biologist] believed that people care about endangered species "for reasons peculiarly our own," the act embraced the Noah Principle, which abjured human aspirations. The nation's natural heritage must be saved, no matter what. The implications of that commitment soon stared Congress in the face-and it blinked. (Mann and Plummer p.169)

It is what they call the perfect duty owed in favor of biodiversity by humanity, that Mann and Plummer see as driving the Act, and which largely fuels discontent with the legislation.

It should be noted that while the Act is clearly the corner stone of American biodiversity protection law, it is not the only stone in the structure. Clark lists the following United States federal statutes as forming part of the structure: the **Marine Mammal Protection Act of 1972** (1972, 86 stat. 1027), **National Forest Management Act of 1976** (1976, 90 stat. 2949). More recently, Congress has established a conservation program for lands owned by the military, programs for tropical forests and the commercial fishery (Clark (1994): 20). Clark further notes that there are also state and local statutes and international conventions that enter into the picture (Clark (1994): 21). Clark finally allows that private groups, such as the Nature Conservancy and Ducks Unlimited, by activities such as entering into agreements with various levels of government, are important players in protecting biodiversity.

2.5.1.1 The Endangered Species Act (1973)

The Act, appended in Appendix A, is the cornerstone of the policy and as such is the focus of this analysis. The sections of the Act of particular interest are 2, 3, 4, 6, 7, 9, 10, and 11.

Section 2 is the purposes section. The purpose is really quite simple. It is to protect the ecosystems housing endangered and threatened species so that those species can be preserved. It is also a purpose of the Act that all federal departments and agencies should promote biodiversity conservation.

Section 3 is the definitions section. There are two things of note here. Firstly, sub-species are included in the definition of species. Species are the unit of conservation, therefore sub-species can also attract the protection of the Act. Secondly, critical habitat is that habitat necessary to insure the survival of a species in the wild.

Section 4 is the meat and bones of the Act. Section 4 delineates the listing process. The same criterion applies to both listing and delisting. The process is commenced by a petition by an individual or a group or on the initiative of the Fish and Wildlife Service or the National Marine Fisheries Service. The Fish and Wildlife Service or the National Marine Fisheries Service are the federal government departments charged

with the Act's administration. The section establishes a ninety-day period from the date of the petition for the Secretary of Commerce (sec 4(a)(2)), for a petition made by the National Marine Fisheries Service or a petition respecting a species over which they have jurisdiction, and the Secretary of the Interior (sec 4(a)(1)) for a petition made by the Fish and Wildlife Service or for a petition respecting those species over which it has jurisdiction, to decide if the petition presents sufficient information to determine that listing may be warranted. The jurisdiction of the National Marine Fisheries Service is basically anything that lives in ocean water and is, or can be, commercially harvested. The Fish and Wildlife Service looks after everything else. These distinctions were put in place by President Nixon by executive order in 1970 (Czech and Krausman(2001)). The Secretary within one year from the date of the petition has to make the decision whether or not listing is warranted. If warranted the species is listed, unless service action on other listing proposals precludes immediate action. In making these determinations the Secretary is obliged by subsection 4(b)(1)(a) to rely upon the best available scientific data as to the numbers of the petitioned species and to the threats or risks that it faces. These decisions are subject to judicial review(sec. 4(b)(3)(C)(ii)). It should be noted that the economic consequences of listing are not to be considered by the Secretary. This was made clear when Chief Justice Burger, speaking for the majority of the United States Supreme Court, in **Tennessee Valley Authority v Hill** said:

> The plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost. (98 S.C.R. 2279 (1978) at p. 2297)

Public hearings are available under subsection 4(b)(5)(E), upon the request of any individual within 45 days of the initial publication of any regulation proposed by the secretary under subsection 4(b)(5), the final orders subsection. Emergency listing provisions are set out in subsection 4(b)(7) and give the Secretary the discretion to promulgate an order by publication in the Federal Register. This emergency listing lasts 240 days from publication unless the Secretary determines that it should, on the best scientific evidence, be earlier abandoned or should become a permanent listing in accordance with subsection 4(b)(5).

Section 6 sets out the requirement for cooperation with the States, particularly with respect to habitat protection. This is largely to be facilitated through federal/state agreements. In the words of the statute: "Such cooperation shall include consultation with the States concerned before acquiring any land or water, or interest therein, for the purpose of conserving any endangered species or threatened species."(sec. 6(a)). Management agreements are the principle tool, wherein the state agrees to look after habitat and the federal government pays up to three quarters of the costs of habitat acquisition and management (Mann and Plummer (1996)). Czech and Krausman view the inclusion of this section as a compromise between traditional sport hunter and angler conservation groups, who feared federal involvement of in wildlife management into game species, and the broader conservation community (Czech and Krausman (2001): 25-6).

Section 7 sets out the requirement that no federal department or agency can do or fund any activity that would place a listed species in danger. This section was amended in 1978 to allow for the creation of what Mann and Plummer have labeled the "God Committee", "after the only power who can overrule Noah"(Mann and Plummer (1996): 170) (see subsections 7(c) through 7(p) of Appendix A). The members of the committee, officially known as the Endangered Species Committee, are the Secretary of Agriculture, Secretary of the Army, Chairman of the Council of Economic Advisors, Administrator of the Environmental Protection Agency, Secretary of the Interior, Administrator of the National Oceanographic and Atmospheric Institute, and one member from each affected state as appointed by the President. This committee has the power to exempt a particular federal project from the operation of the Act. The committee's decisions are subject to judicial review by subsection 7(n). Subsections 7(c) through 7(p) establish a minefield of procedural requirements and time limits. With these fourteen procedural requirements and time limits it easy to see why in 1996, some eighteen years after the amendment passed and seventeen years after the Endangered Species Committee's January 23, 1973 unanimous ruling against an exemption for the Tellico Dam across the Little Tennessee River (Mann and Plummer (1996): 171) Mann and Plummer observed:

> Notwithstanding the fears of some members of Congress that the escape hatch would turn into a revolving door, the God Committee has met once since the Tellico Dam; in three other cases, a party has applied for an exemption but did not proceed beyond the preliminary stages of the appeal process (Mann and Plummer (1996): 175).

The Committee is obliged to grant an exemption in two instances. First pursuant to subsection 7(j), if the Secretary of Defense declares a project necessary for nation

security reasons. Second pursuant to subsection 7(p), if the President of the United States acting under his authority under the **Disaster Relief and Emergency Assistance Act** (42 U.S.C.A. Section 5121 et seq.), deems a waiver necessary for a project for the repair or replacement of a public facility. The President's authority is limited in that the repaired or replacement facility must be substantially as it existed prior to the disaster under which the President invoked the **Disaster Relief and Emergency Assistance Act** (42 U.S.C.A. Section 5121 et seq.).

Section 9 prohibits any activity adverse to the health or welfare of any listed species. Section 9 also makes it an offense to violate any regulation pertaining to an endangered species or the threatened species of fish or wildlife (subsection 9(a)(1)(E)). Thus, as critical habitat is designated by regulation under subsection 4(b)(6)(C), it is an offense to harm critical habitat.

Section 10 provides the exemptions to the Act. There is an exemption for scientific study including captive breeding programs (subsection 10(a)(1)(A)). Subsection 10(a)(1)(B) of the Act allows for the issuing of a permit for the incidental destruction of habitat and incidental taking of listed species if the acts are incidental to another otherwise lawful purpose. By subsection 10(a)(2) provides that an exemption can only be granted if conservation plan has been accepted by the Secretary. The plan, by subsection 10(a)(2)(B) is subject to public comment. The plan has to show that a listed species will remain viable. Given the nature of listed species this is no simple task. There is a short-

term (maximum of one year(sec 10(b)(1)(A)) exemption for undue economic hardship caused by the listing of a previously unlisted species (sec 10(b)). The definition of undue economic hardship (sec 10(b)(2)) requires a person to suffer a substantial economic loss due to the inability to perform a contract entered into prior to notification of the commencement of the listing process in the Federal Register (sec 10(b)(2)(A)). The taking of the proposed listed species can only be legal if in the year prior to the notification of the commencement of the listing process such takings formed a substantial portion of the person's income (sec10(b)(2)(B)) or, a person who is involved in takings for subsistence, with no other subsistence takings alternative (sec 10(b)(2)(C)). This definition would seem to practically exclude any potential applicants for the exemption except hunter/gathers. It should also be noted that this exception cannot be granted for a species listed under Appendix I of the **Convention on International Trade in Endangered Species of Wild Fauna and Flora** (sec 10(b)(1)(C)). Subsection 10(j) allows an exemption from the Act for the purposes of attempting to reintroduce an extirpated species.

Section 11 sets out the penalties. Simply put, after a hearing the Secretary of the Interior can level a civil penalty of up to twenty-five thousand dollars per violation (sec 11(a)(1)). In the event that criminal charges are laid there is a maximum fine of twenty-five thousand dollars and/or up to six months for any person who knowingly violates any regulation except those specifically listed in subsection 11(b)(1). Alternatively criminal charges can lead to a maximum fine of fifty thousand dollars and/or one year

imprisonment for any person who knowingly violates any section of the Act, or a permit or certificate issued under it or any of the regulations specified in subsection 11(b)(1).

2.5.1.2 The Response to the Act

How has the Act faired? To President Nixon and the members of Congress, in 1973, the protection of biodiversity must have seemed a policy as good and benevolent as motherhood and apple pie. The Act was passed and proclaimed with nary a whimper of dissent. The Act passed 92-0 in the Senate and 390-12 in the House of Representatives (Yaffe (1982): 56). In the nearly thirty years that have followed enactment, the voices of discontent with the Act have become a veritable roar(Mann and Plummer (1996), Czech and Krausman (2001), Yaffe (1984), and Clark, Reading and Clarke(1994)). The dissatisfaction with the Act crosses the political spectrum, albeit for substantially different reasons. The conservationists bemoan what they see as the Act's glaring failures: few species listed, the length of time required for listing, the fact that delistings due to extinction outnumber delistings due to recovery, amongst others (see for example Clark, Reading and Clarke (1994)). On the other hand, those who take a more humanistic view of the operation of the Act attack what they perceive as the Act's effect on their lives and businesses, with complaints such as: why should a fish stop the Tennessee Valley Authority from using a substantially completed dam (**TVA v. Hill** 98 S.C.R. 2279 (1978)), why should a butterfly stop Wilton, New York from spraying for mosquitoes (Mann and Plummer (1996): 95-97), why should a beetle stop the State of Oklahoma

from building a road to a hospital (Mann and Plummer (1996) Chpt. 1). The questions Mann and Plummer pose generally amount to asking why the restriction on killing of an endangered species or the protection of its critical habitat, the core of the Act, should interfere with the use and enjoyment of property by humans; particularly when the species in question are apparently insignificant. What after all, the argument runs, is one less ugly fish species or one less butterfly or beetle species when compared to freedom from mosquitoes, sport fishing behind and the electrical power generated by another dam in the Tennessee River Valley, or easy access to a hospital?

The extent of the current dissatisfaction with the Act can easily be seen by considering the indictment of the Act offered by Clark, Reading and Clarke, and by Mann and Plummer. Following a depressing paragraph about "a few statistics about the endangered species problem"(the estimates of species loss cited earlier in this chapter) (Clark, Reading and Clarke (1994): 3), Clark, Reading and Clarke go on to say:

> Are there plausible explanations for these dismal facts? Perhaps the ESA is an unworkable law; perhaps it addresses elements and processes that have no bearing on the disappearance of species. Another possibility is that extinction is inevitable given the scale and pace of human alteration of landscapes and no herculean human efforts can stop its course. Or perhaps it is simply that the implementation of the existing law has been weak- . . . (Clark, Reading and Clarke (1994): 3).

Mann and Plummer offer a somewhat different account:

> In Robert Allen's day, the law imposed few duties toward biodiversity. When he traveled to Aransas, his expenses were paid by his employer, the National Audubon Society, a private organization; when he convinced the helicopter pilot to fly him near the whooper's breeding grounds, he used persuasion, not the coercive force of the state; and when

he exhorted others to join his crusade, he drew on the love for the crane shared by his fellow biologists, naturalists, and citizens in Canada and the United States-but he could not order people to change the way they lived. People helped him because they thought saving the crane was good and virtuous, not because they had a legal obligation to participate.

Since that time, laws like the **Endangered Species Act** have expanded our obligations, pushing them closer to the realm of perfect duties. Moving away from the old balance is surely good in principle, because in the past our legal system did not nudge us to remember our natural heritage and thereby may have helped to encourage thoughtless waste. At the same time, one can wonder whether our laws today strike the proper balance among goods (that is, whether they are ethical), and whether they respect the importance of having appropriate means (that is, whether they are practicable).

A clue to the answer came during our visit to Florida. After visiting the cranes, we drove to a restaurant a few miles away with Stephen Nesbitt, the biologist. The restaurant looked like any farmland eatery: faded tablecloths of red-and-white plaid, a plethora of calendars on the wall, pickup trucks in the parking lot. The room was full of burly men who looked as if they worked outdoors. To our surprise, heads swiveled in our direction when we entered. The object of the stares was not us, the two strangers with notebooks, but Nesbitt, in his Game and Freshwater Fish uniform. . . .

Along the way, it occurred to us that matters had gone awry. Ranchers, farmers, loggers, and the like live in rural places because they love the outdoors and its inhabitants. Nesbitt was a biologist for precisely the same reason. Yet Nesbitt's uniform set them off. Something about the simple presence of someone associated with government-organized efforts to preserve wild areas attracted hostility from the very people who live there (Mann and Plummer (1996): 145-146).

What prompted this change in the way that the Act is viewed? Arguably, the change resulted from the failure of Congress to consider how individuals view benefits and costs of a program. It is the bureaucrats of the United States Department of the Interior Fish and Wildlife Service and the National Marine Fisheries Service who are largely responsible for the implementation of the Act. It is the American resident who has his or her property and way of life affected by the operation of the Act, or at least

perceives such effects. From the received economic theory of rational expectations it is clear that an economic agent's decisions, particularly in the face of incomplete information are going to be affected by the agent's perception of reality. Thus, if agents have a rational reason to believe that the Act is placing a burden on them, say for example they can witness the tax payers of Wilton, New York being forced to pay more for less effective mosquito control to save some butterflies, or the residents of rural Oklahoma being required to drive farther to get to hospital for the benefit of a beetle, they will form the expectation that the Act is imposing costs on them. If this perception of costs is coupled with a perception of benefits, which the rational agent will have given the much heralded if amorphously specified benefits of biodiversity, the rational agent is going to want his or her perceived benefits to equal or exceed the perceived costs. Should the perceived benefits not equal or exceed the perceived costs, a policy that forces such a situation on rational agents is not going to be popular. This want of popularity is going to be exacerbated if the rational agent expects that his or her share of the costs is higher than some other agents, particularly if there is a common benefit. Congress, apparently, neglected to consider these sorts of effects, and thus the Act has become a piece of legislation decried by many, lauded by few. That rural residents, in general and property holder specifically, should resent Nesbitt's uniform should not be surprising; they reside where the endangered species and their habitats exist. Thus, they fear they will bear the costs, while the benefits will be shared among the entire society, including those urbanites who often destroyed the habitat to create their cities.

How has this dissatisfaction with the Act been expressed? Mann and Plummer observe:

> As a result they had a great incentive to ensure that official endangered species never appeared on their property. The implications of this were demonstrated in an extreme form by the case of the San Diego mesa mint, which the Fish and Wildlife Service proposed listing in October 1978. One of the plant's three populations inhabited a 279-acre tract on which Pardee Construction of San Diego intended to erect a 1,429-unit subdivision. Pardee had asked the Veterans Administration to provide a loan guarantee. A few days before the mesa mint was added to the list, the VA informed the developer that the plant lived on the site; Pardee promptly bulldozed the population while it was still unprotected. After a few angry letters, the company got a VA loan guarantee-no endangered species existed on the property to disrupt construction (Mann and Plummer (1996): 187).

If people will race the listing process to be rid of an endangered species is there any reason to believe that losing the race will alter their behavior, particularly if there is a good chance that the presence of the listed species is unknown?

While the incorporation in the Act of an incentive perverse to its purpose is sufficient to generate concern among conservationists it is not the only concern expressed in relation to the Act and its goals of protecting endangered flora and fauna regardless of cost. Clark suggests that the Act's implementation can be criticized on eight grounds. First, as the Act fails to establish qualitative or quantitative standards for what constitutes danger of extinction, it suffers from imprecise standards for delineating species status. Second, the Act is said to suffer from inappropriate units of protection, by section 4 it protects species rather than ecosystems. Third, the Act leaves funding decisions principally in the administration's hands. The fact that in 1990 one-half of the funds

available for recovery projects were spent on ten species leads Clark to argue that the administrations funding decisions pay undue attention to high profile species. this is, of course, to the detriment of less popular, although potentially more biologically important species. Fourth, Clark argues that as subsection 4(a)(3) sets out that habitat should be protected only to the "maximum extent prudent and determinable" that insufficient habitat has been protected given the latitude the phrase allows. Fifth, although the Act requires by subsection 4(f) that recovery plans be adopted Clark argues that since the Government Accounting Office reports that only 61 percent of listed species have approved recovery plans that the recovery planning process is inadequate. Sixth, the only time that the Act requires the consultations between federal agencies be public is an application for exemption to the "God Committee". Clark argues that because of this want of transparency that the Act's interagency consultation process is inadequate. Seventh, Clark argues that since Congress did not specify a methodology for accounting for uncertainty in the Act that whatever method the services choose to use is subject to attack for being inappropriate. Finally, given the dicta in **TVA v. Hill** (98 S.C.R. 2279 (1978)) it is clear that the Act pays insufficient consideration to economic factors (Clark (1994): 30-35).

In his proposed solutions to these eight problems Clark notes three more problems. First, Clark alleges that the resources allocated to the endangered species problem are insufficient. Second, he argues that too much discretion is granted to the implementing agencies by the Act. Last, he observes that extensive politicization of the

system has occurred (Clark (1994): 36-38). It seems that extensive politicization of the system in fact underlies all to the other complaints in Clark's indictment of the Act.

Czech and Krausman bring a tangential view to the Act and its apparent problems. They view any problems with the Act as relatively minor and fairly easily overcome. They argue that the Act is technically legitimate(Czech and Krausman (2001) Chpt 7), its major problems being twelve incorrect or highly questionable assumptions made by the drafters of the legislation (Chpt 5). They aver that these assumptions are either the result of political compromise or underestimation of the resource requirements for achieving the Act's goals (Chpt 5). By their reasoning, given technical legitimacy, correction of the incorrect and questionable assumptions would render the Act good policy. Any remaining problems are the result of the underlying structure of American society. Thus, they argue that the problem lies not with the Act, but specifically with the social ethos they perceive in American society that views economic growth and increased consumption as laudable. The solution to the problem, becomes relatively simple; decrease consumption to the point were the United States adopts a steady state economy, relying upon its own natural capital base for all of its consumption (Chpt 11). This essentially is a call for living off of the interest of the natural capital rather than the principle. They further argue that adoption of this solution removes the apparent hypocrisy of the North admonishing the South to conserve and preserve (Chpt 11). Their analysis will undoubtedly be viewed as naïve, by some, in that it fails to consider the undeniable gains from trade, first demonstrated by Ricardo, and Solow's steady state

growth models. Finally, beyond noting that compared to other nations in the world the United States is relatively wealthy in natural capital per capita (Czech and Krausman (2001): 163) and that the view that economic growth must be slowed is gaining in popularity (Czech and Krausman (2001): 142) they offer no real guidance as to how this transition is to be effected.

2.5.2 Canada's Position on the Introduction of the Bill

Given the apparent problems that the United States has encountered with its endangered species protection legislation why would Canada chose to travel down the path of attempting to legislate the protection of endangered species? Perhaps the first place to seek an answer to such a question is with the legislators themselves, who like the witnesses before the House of Commons Standing Committee on the Environment and Sustainable Development largely see the enterprise as laudable. It bears notice that the high praise for legislation to protect endangered species crossed all political parties within the House of Commons and across all regions of the country. Some examples follow.

Mrs. Karen Kraft Sloan, Parliamentary Secretary to Minister of the Environment, of the Liberal Party of Canada on November 29, 1996 speaking to a motion to send the Bill to committee prior to second reading said, in the House of Commons:

> Canadians from all walks of life, from urban to rural areas, have told us we need endangered species legislation.

Members of Parliament on both sides, in the government benches and in the seats across the way, have reflected this genuine concern for Canada's wildlife. That is why the government looks forward to working with the committee while they study and strengthen Canada's first ever endangered species legislation.

The government commitment to this legislation was made in the speech from the throne. It followed extensive consultations with wildlife conservation groups, other environmental groups, farmers, the private sector, provincial and territorial governments and individual Canadians. Our planet is losing from one to three species per day, mainly as a result of human activity. The recently released IUCN red list contains over 5,000 animal species currently at risk of becoming extinct. Unhappily some countries now have up to 50 per cent of their mammal species in this category.

Fortunately Canada is nowhere near that figure but we are not immune from this disturbing trend. One out of every 25 of our mammal species and one out of every 33 of our bird species are threatened or endangered. In Canada 276 species of fish, amphibians, reptiles, mammals and plants are facing extinction and once they are gone, they are gone forever.
All levels of government have a duty and a responsibility to work in partnership with one another and with concerned citizens across the country and around the world to do all in our power to prevent this from happening.

. . .

As I said, Canadians feel passionately about our natural environment. Our provincial and territorial colleagues and our federal minister have listened to Canadians. Last month we agreed to a national accord to the protection of species at risk. With it we have put nature first and jurisdictional disputes second.

The accord commits all provincial and territorial governments, along with the federal government, to take action within specific time periods to provide for the recovery of species in danger. I am confident that the provincial and territorial governments will live up to the spirit and the letter of that agreement in the same way that we are doing with this legislation before us today (Hansard November 29, 1996).

Mrs. Monique Guay, the Member of Parliament for Laurentides, of the Bloc Quebecois speaking to the same motion as Mrs. Kraft Sloan observed:

> In the last two decades, the preservation of biodiversity has become an international priority. As a result, we had the 1980 World Conservation Strategy; the 1991 report entitled ``Caring for the Earth"; the 1987 report of the World Commission on Environment and Development entitled ``Our Common Future"; and more recently, in 1992, the International Convention on Biological Diversity. As we can see, environmental awareness is a recent reality.
> In Canada, some provinces and the federal government have already passed laws in this area. Some 12 federal acts deal with the conservation and protection of threatened species. These laws include the Canada Wildlife Act, the Migratory Birds Convention Act, the Fisheries Act, the National Parks Act, the Health of Animals Act, and the Canadian Environmental Protection Act.
>
> At the provincial level, four provinces-New Brunswick, Quebec, Ontario and Manitoba-have their own laws designed to protect endangered species. As for the other provinces and the territories, they have laws on wildlife management and endangered species. Their content varies considerably.
>
> On October 2, at a meeting in Charlottetown, the federal and provincial ministers responsible for wildlife agreed in principle on a national convention for the protection of wildlife in Canada. This agreement is designed to prevent the extinction of wildlife species in Canada as a result of human activity. It establishes a new framework for co-operation between the federal, provincial and territorial governments. It deals with co-operation, collaboration and complementarity between its signatories (Hansard November 29, 1996).

Finally, Mr. Paul Forseth, the Member of Parliament for New Westminster-Burnaby, of the Reform Party of Canada added:

> Mr. Speaker, it is good to be able to speak to this motion today which has some basic optimism about doing good things which have general social support across the country.
>
> As civilization on this planet becomes more developed, humanity encroaches on the world ecosystem. Although there is some adaptive specialization and limited evolution to the living world, what we observe is a general trend to deterioration of the environment and living things, and more prospect of dying than living and the trend to extinction rather than survival.

> There is difficulty for mankind to find better health on this spaceship earth, as it is turning into everything opposite of the garden of Eden. Society may not be able to halt all of what is happening to the earth, but we can be reasonably responsible in stewardship. Mankind is on a life support system called earth that hurdles through space. It is all we have for our children, so we have to take care of its bounty and all those who live on it.
>
> Today with this bill we are attempting to mitigate some of the excesses of civilization on other species. It is not the dawning of a new day but some basic housekeeping for our land (Hansard November 29, 1996).

On February 4,1997 the Honorable Sergio Marchi then Minister of the Environment said:

> After all, Canada in 1997 is where Europe, for instance, was about 125 years ago, in terms of abundance of wildlife and richness of our biodiversity. In Europe they now put wild animals on their coats of arms and even name cities after bears, but just about the only real animals Europeans enjoy are the ones they find in their zoos, or the ones they find when they visit us in greatly increasing numbers in Canada.
>
> In Canada we have an opportunity to be different, and for the sake of our children and the generations to come we must remember what happened in places like Europe and elsewhere on the globe and not get caught up in the unrelenting chase of industrial development at any cost.
>
> Canadians of all ages, of all backgrounds, from all regions of the country, both rural and urban, want this legislation. So it's up to us to deal with it as quickly and as firmly as we can, and to make it better if we can, but above all and at the end of the day to make it part of Canadian law within the life of this Parliament (Archive of Committee Evidence, Meeting 69, 04 Feb 1997).

From the above that there are several common threads that appear to have fueled the belief, held by Canadian Parliamentarians, that Canada required legislation to protect endangered species. Foremost is the state of biodiversity in Canada and the desire to protect and enhance it. Mrs. Guy points to the presence of the **Convention on Biological**

Diversity, as a signatory Canada is obliged to protect its biodiversity. Mrs. Guy also points out some of the steps both federally and provincially that have been taken to that end. By implication Mrs. Guy's comment reveal a further reason; given that respect for political borders is not in the nature of members of the plant and animal kingdoms effective protection in Canada is only possible through federal legislation. That is, since Canada is a federal state in order to protect species that move across both interprovincial and international boundaries the national government has to act. From Mrs. Kraft Sloan's comments **The National Accord on the Protection of Species at Risk** obliged the Government of Canada to legislate to protect species at risk. It would seem that the legislators quoted above take the view that the Bill was meant to be the apex of legislative initiatives aimed at protecting biodiversity that began with the formation of the national park system with the establishment of the first Canadian national park, Banff, in 1885. It bears notice that this is not substantially different than the American experience highlighted in Section 5.1, albeit some 23 years later. The present challenge is to attempt to determine the wisdom of the Government of Canada's choices.

2.5.2.1 An Overview of Bill C-65

Bill C-65 is appended as Appendix B. Section 2 of the Bill is the statutory dictionary, which sets out the meanings that the listed words and phrases take throughout the Bill. Of particular note are the definitions of "critical habitat", which is habitat that is critical to the survival of a wildlife species, and "endangered species", which is a species

that is facing imminent extinction or extirpation. The definition of "residence" will be specifically addressed in chapter five. It bears notice that definition of "wildlife species" includes subspecies and geographically distinct populations.

Section 3 is the applications section. It sets out that the Act applies to all wild species on federal land. Section 33 has the potential to expand the application of the Act to private property. This will be discussed more fully in chapter 5. Section 4 binds the Crown, that is it sets out that the Government of Canada would have been subject to the operation of the Bill as if it were just another person in Canada. While section 5 is the purposes section. The purpose of the Bill is to prevent the extirpation or extinction of wildlife species, and to provide for the recovery of those species that face either risk, as a result of human activity.

Administration is dealt with in sections 6 through 8. Section 8 allows the Government to enter into agreements with anyone it pleases, to provide contributions to the costs of programs or measures aimed at facilitating the purposes of the Bill. The section does not oblige the Government to neither enter into any agreement nor attempt to negotiate them in good faith. While sections 9 through 11 establish a public registry to facilitate access by the public to documents relating to matters under the Bill, and thus provide transparency. Section 12 establishes the Canadian Endangered Species Conservation Council. It is a federal and provincial Ministers committee charged with overseeing the activities of the Committee on the Status of Endangered Species in

Canada (COSEWIC), which is established by section 13. COSEWIC is charged with determining the status of species, and reporting same. As in the United States, this determination is to be made solely on the basis of biological evidence. Sections 14 through 17 set out the rules under which COSEWIC operates. Sections 18 through 30 deal with the listing procedure. They include the designations and that can be made, the various reporting procedures, application procedures and decision rules. These will also be examined in more detail in Chapter 5.

Section 31 through 33 set out the prohibitions. Sections 31 and 32 read:

> 31. (1) No person shall kill, harm, harass, capture or take an individual of a listed endangered or threatened species.
>
> (2) No person shall possess, collect, buy, sell or trade an individual of a listed endangered or threatened species, or any part or derivative of one.
>
> 32. No person shall damage or destroy the residence of an individual of a listed endangered or threatened species.

Section 33 grants the Minister regulatory power to protect cross boundary species and will be discussed more fully in Chapter 5.

Section 34 allows COSEWIC to make an emergency order, which the Minister must repeal when adequate measures have been taken in response to the emergency order. Section 36 sets out some general exceptions to the prohibitions. These include activities authorized by another Act of Parliament for the protection of national security, health or safety; activities in accordance with an aboriginal treaty, land claims agreement, self-government agreement or co-management agreement that deals with wildlife;

activities in furtherance of a recovery plan. Sections 38 through 45 of the Bill deal with the recovery planning process. The sections set out that if recovery is feasible that the federal government is to attempt to cooperate with all interested parties, including all levels of government, foreign or domestic, individuals and citizens groups to see that it occurs.

By section 46 the Minister can issue permits for activities that would otherwise be outlawed. The permit can only be issued if it can be shown that the species survival will not be imperiled by the activity, that all reasonable alternatives have been considered, and that everything feasible will be done to minimize the activities impact on the species. The section reads:

> 46. (1) The responsible minister may make an agreement with a person, or issue a permit to a person, authorizing them to engage in an activity affecting
> (a) a listed endangered or threatened species or its critical habitat; or
> (b) wildlife species to which regulations under section 33 apply or its residence.
>
> (2) Before making the agreement or issuing the permit, the responsible minister must be satisfied that
> (a) all reasonable alternatives to the activity have been considered;
> (b) all feasible measures will be taken to minimize the impact of the activity on the species or its habitat or residence; and
> (c) the activity will not imperil the survival of the species.
>
> (3) The agreement or permit may contain any terms and conditions governing the activity that the responsible minister considers necessary for protecting the species, minimizing the impact of the authorized activity on the species or providing for its recovery.
>
> (4) The responsible minister must review the agreement or permit if an emergency order is made with respect to the wildlife species.

(5) The Minister may make regulations respecting the issuance, renewal, revocation and suspension of agreements and permits.

Section 47 allows permits issued, or agreements entered into by responsible ministers under other acts to have the same force and effect as those from section 46, provided the responsible minister considers those things specified in subsection 46(2). Section 48 sets out that all permits and agreements must be registered. Section 49 ties the act to the environmental assessment process. The section requires that the Minister be advised any time that a project that is likely to affect an endangered species or its habitat comes before an authority under the **Canadian Environmental Assessment Act**. The section also obliges the authority to ensure that the effects on the species or its habitat are mitigated in accordance with the recovery plan for the species.

Sections 50 through 59 set out the enforcement measures. Among other things these sections grant powers of search and seizure and allow for forfeiture. Sections 60 through 76 establish a procedure whereby anyone can bring an action to enforce the Bill, regardless of interest. That is, anyone has standing to commence an action, even if the only interest they can show is public interest, if they follow the procedural hoops set out in the Bill.

Sections 77 through 99 deal with offences and punishment. Section 77 establishes a dual offence for breaching sections 31 or 32 or any regulation or emergency order. There is a maximum $100,000 fine for a corporation and a maximum $50,000

and/or one year imprisonment for an individual convicted on summary conviction. Conviction by indictment subjects a corporation to a maximum fine of half a million dollars, while an individual faces a maximum fine of $250,000 and/or five years imprisonment. The maximums double on subsequent convictions. A continuing offence can be charged separately day by day, with the fines being cumulative. Section 80 establishes a defense of due diligence. Section 81 through 86 deal with administrative details like forfeiture and venue. Sections 87 through 99 establish an alternative measures procedure. Rather than face trial and conviction an accused person with the consent of the attorney general can elect alternative measures, accept some form of punishment and avoid conviction and the associated record. The attorney general is obliged to consult with the Minister prior to consenting, and can only consent if the use of alternative measures would not be inconsistent with the purposes of the Bill. By section 100 the crown can prescribe fees and charges for a permit or agreement under section 46 and for access to or inclusion of records in the public registry. Section 101 through 103 deal with reports to Parliament. Section 101 requires an annual report by the Minister on the administration of the Bill. Section 102 requires a report on the status of wild species. The first report is due three years after the coming into force of the Bill will subsequent reports required every five years. Section 103 requires that committee of either the House of Commons or the Senate or a joint committee of both Houses of Parliament is initiated to conduct a comprehensive review of the Bill. Again, this committee was to sit three years after coming into force and subsequently every five years.

This brief review of the two pieces of legislation should make two things relatively clear. The Bill shares some key components with the Act, particularly in the areas around listing, and listing's consequences. Second, the Bill makes an attempt at addressing some of the complaints with the Act. The question that remains is how successful could those attempts have been expected to be?

CHAPTER THREE

CONSIDERATIONS FROM ECONOMIC THEORY

3.1 Market Failure

If the root of the endangered species problem is habitat loss and if land use decisions are made in self-interest, why then have markets failed to provide the habitat necessary for the sustainable continuance of the human species? In other words, given that the habitat market has apparently failed, the question becomes what has caused the market for habitat to fail and what institutional problem underlies that failure?

The simplest answer would be that markets have not failed. This, of course, from economic theory, would require that our society has a utility function that ignores future generations or that current treatment of endangered species is optimal. That is, if the proposition that markets have not failed holds, economic theory tells us that one of two things must be true. Either our society as a whole does not care about the living conditions of its children and grandchildren or that the current level of biodiversity is sufficient to allow future generations to live in the style that society desires them to have. The fact that the popular press is consistently reporting polls that exhibit ever increasing environmental awareness suggests that there is little merit in the proposition that markets have not failed. If things were perfect, people would not be worried.

The Government of Canada upon examining the endangered species problem in 1996 concluded that some form of governmental intervention was necessary to abate the habitat driven endangered species problem[1]. To a neo-classical economist this implies that the Government of Canada had concluded that the market had failed to provide an optimal level of habitat. Market failure is the only justification for governmental intervention in the economy in the neo-classical economic paradigm[2].

Markets in the neo-classical welfare paradigm fail when they fail to achieve the Pareto optimal allocation of resources. This may occur for a variety of reasons. These reasons range from market power through any number of identified information problems to ill defined property rights (Just, Hueth and Schmitz, 1982).

This suboptimal allocation of goods and services is, in neo-classical economic theory, the result of inappropriate price signaling, or quantitative restrictions such as quotas. That is, as a result of the market failure the relative prices of the goods and services as revealed by the market are incorrect in that they do not reflect the value of the scarce goods. If habitat is under provided, theory suggests its relative price is to low, which is to say that the market is ascribing a price to habitat relative to other land uses that over values the alternative uses. This is a market failure.

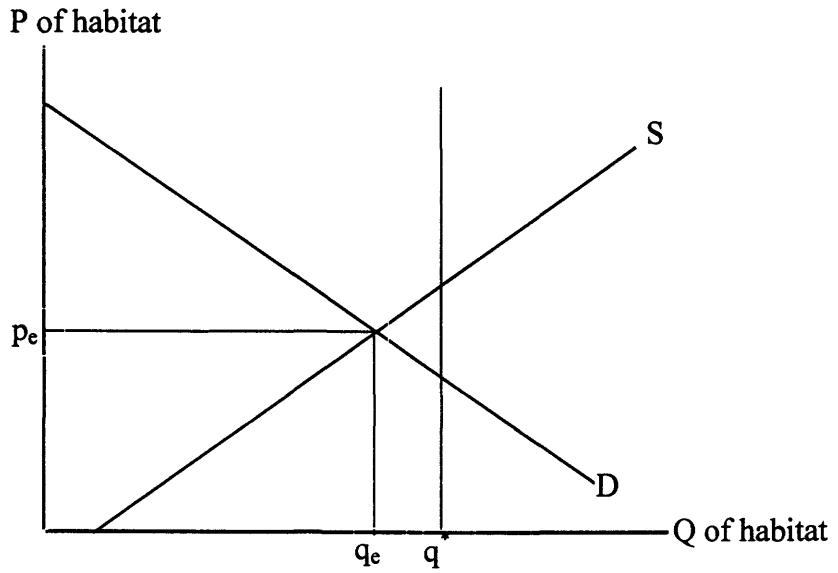
[1] This should not be taken to preclude the possibility that the Government of Canada was in large part responding to the environmental lobby.
[2] See Boadway (1997) for a discussion of market failure in the context of stabilization and distribution objectives of government.

What could lead the market to undervalue habitat relative to other land uses? First, the supplier cannot entirely capture the benefits of supplying habitat. For example, a private landowner is not able to charge individuals when endangered species exist on private property. There are information problems that result in the market under producing habitat. Biologists do not know the relationship between habitat and the entropy reducing capabilities of ecosystems. In theoretical terms this means that marginal social benefits and marginal private benefits of supplying habitat are not equivalent.

Graphically this can be represented in figure 3.1. Where the P axis is the price of habitat and the Q axis is the quantity of habitat. S is the private supply curve for habitat.[3] The private supply curve is the locus of points were private individuals are prepared to supply the greatest quantity, q, of habitat that they are prepared to supply at the price, p. That is, for any given price, p, the maximum amount of habitat that private individuals will supply is the quantity, q, read off the supply curve. D is the private demand curve for habitat. The private demand curve is the locus of points that represent the minimum quantity of habit, q, that private individuals will demand at a given price, p. That is, the most that private individuals will pay for a given quantity of habitat, q, is the price, p, read off the demand curve. The private market is said to be in equilibrium when the quantity demanded is equal to the quantity supplied at the same price. That is the intersection of the supply and demand curves for habitat, were at the same price suppliers

are supplying as much as they are willing to while at the same time demanders are receiving the least amount they will take. In figure 3.1 the market equilibrium would be to supply habitat in the amount q_e at the price p_e. In the absence of market failure, the allocation of habitat at the equilibrium, q_e and p_e, can be shown to be optimal.[4] If, however, you live in a world, as we apparently do, were the optimal amount of habitat is q^* there is a clear market failure and government intervention is justified by received economic theory.

Figure 3.1: The Private Demand and Supply of Habitat



Given that there is a market failure before government intervenes it is necessary to ascertain the cause of the market failure. The cause of the market failure needs to be ascertained in order to insure that the corrective policy adopted does not exacerbate the

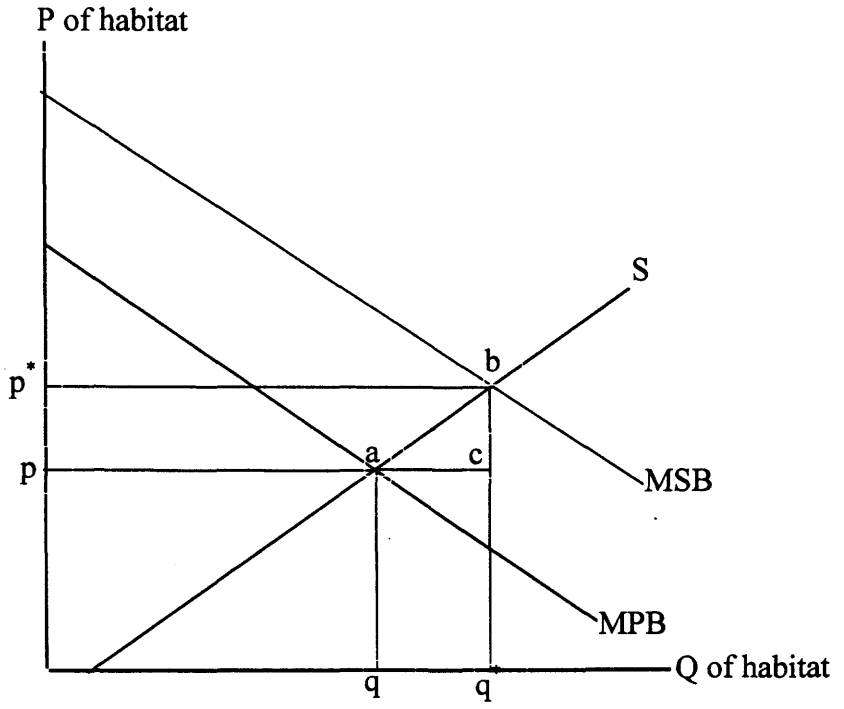
[3] The supply curve intercepts the quantity axis to the right of the origin, because there is some land that has no economically viable use other than habitat. As technology continues to change so will the intercept of the supply curve and either the quantity or the price axis.
[4] The interested reader can see Varian for example.

problem. In the instant case the problem is caused by the public good nature of biodiversity generally, and endangered species habitat specifically.

The public goods problem has its roots in the inability of the provider of the good to extract all the benefits available from the supply of the good. By received economic theory an economic agent will only make an investment if the expected stream of benefits that the investor can extract from that investment is equal to or greater than the costs associated with the investment. The costs in such a comparison, again by received theory, must include the opportunity costs of the investment. That is, those benefits that could accrue to the agent through an alternate use of the investment, in the case of habitat the foregone benefit of some other use of the land. The economic agents that provide endangered species habitat, landowners, cannot extract the complete benefit generated by the land as habitat. This is because no legal means exists for the landowner to extract the benefits that other people receive from the habitat. In fact, the only benefit that landowners can extract is their own personal benefit. Thus, when landowners compare the benefits available to them of the land as habitat to the costs associated with the land as habitat, they will value only the benefits that they can extract, and accordingly will under invest in habitat. This is because as soon as some other use, say growing grain, produces benefits to the landowner that are greater than the benefits that the landowner receives from the land as habitat that other use will be chosen. This is true even if the total benefit to the society of the land as habitat exceeds the total benefit to society from the other use, and is the root of the public goods problem.

The public goods problem is modeled graphically in figure 3.2. In figure 3.2 MPB is the marginal private benefit of habitat, while MSB is the marginal social benefit of habitat. Marginal private benefit is the benefit gained by private individuals from the last unit of habitat created and in a perfectly competitive world is the same as the demand curve in figure 3.1. Marginal social benefit is then, of course, the benefit that society gains from the last unit of habitat created. The fact that these two curves are separate is why the market failure occurs. Q, P and S are, as in figure 3.1, the quantity, the price[5] and the supply of habitat.

Figure 3.2 Market for Habitat with the Public Goods Problem



[5] The price of supplying habitat need not be a direct cash outlay on the part of property owners. In fact, the cost of habitat is likely to be the opportunity cost of foregoing some other use for the land.

By the same reasoning that the intersection of the supply and demand curves in figure 3.1 represent an equilibrium in the private market, the intersection of the MPB and the supply curve, at p and q represents the identical private equilibrium in figure 3.2. However, by allowing the private suppliers to extract the social benefit rather than merely the private benefit, figure 3.2 shows that the optimal quantity of habitat, q^*, is available at the price, p^*, were the MSB curve intersects the supply curve. That is, at the point were for the same price, the maximum amount of habitat that suppliers are prepared to supply is just equal to the minimum amount of the benefits of habitat that society is prepared to accept at the price. The move from point a to point b requires the elimination of the gap between the two benefits curves, the solution to the public goods problem. The gap exists between the two benefits curves, in figure 3.2, because the landowners can and will choose uses for the property other than habitat, when they only receive p of benefit rather than p^* of benefit. In instances like this, the policy government wants to adopt is one that will eliminate the gap between the MPB and the MSB curve. One way the gap can be eliminated is by the transfer from the rest of society to landowners of an amount equal to the area in the rectangle pp^*bc. That is, one policy that will solve the problem is to have an additional amount pp^*bc invested in habitat by the state. This is the classic Pigovian subsidy. If a change in landowner preferences, that is, if what they perceive as beneficial and how they value it occurs that results in an upward shift of the MPB curve to the point that it overlays the MSB curve, then the problem eliminates itself. This notion underlies the idea that education will assist in alleviating the endangered species problem.

If the market fails in supplying habitat to the level where marginal social benefit equals marginal social cost, is this a prima facia case for government intervention? Governments also fail, especially when providing environmental goods because of the high transactions and information costs. The transactions costs literature takes a different view on the role of government when markets fail and when government intervention becomes justified. Therefore, a discussion of transaction costs and property rights is required before answering this important question.

3.2 Transaction Costs

The term transaction costs is attributable to Ronald Coase (Coase (1960)). Transaction costs are quite simply those costs associated with conducting a transaction. They include a variety of costs, from the cost of finding a purchaser, to the cost of determining if what you received is what you contracted for, to the costs of determining if an employee is shirking. They are an economies analog of friction in the physical world. Just as friction affects the movement of physical objects, transaction costs affect the manner in which transactions occur and are governed within an economy. If the costs of conducting a transaction become too high the transaction may not occur. With transaction costs minimized the neoclassical economic competitive equilibrium results in an efficient allocation of production and consumption within an economy. This is the so-called Coase Theorem. Thus, apparent market failure must be examined in a new light.

Market failure must be examined in the context of all of the costs, including any costs that government imposes on the apparent market failure. Thus, it is possible that the only way that the apparent market failure can be relieved is by minimizing the transaction costs, including those imposed by government. Thus, even if transaction costs are minimized everywhere else in the economy poorly designed governmental policy can increase transaction costs and reduce the amount of goods and services produced. That is, relative prices actually discovered in the market may be different from actual relative scarcity because of transactions costs imposed by government and not because of the use of market power, or one of the other neo-classical causes of market failure. The price of failing to recognize the true cause of the problem and as a result adopting an inappropriate governmental response may be to worsen a bad situation.

Oliver Williamson and others have advanced these concepts. The result has been that the neoclassical economic paradigm is left with a small and diminishing role in the evaluation of policies and events advanced and occurring in the real and theoretical world. The role is largely a comparative one, the actual result is compared to the standard set by the neoclassical result. Williamson's contributions include positing humans as boundedly rational and opportunistic as opposed to the neoclassical assumption of rational behavior (Williamson (1986)). This has several important implications. First, time matters. What a bounded rational actor sees as his or her best interest **ex ante** may not prove to be his or her best interest **ex post**. So long as he or she can take an action to alter the **ex post** outcome when he or she recognizes the change in

circumstances he or she will. The expected benefits of such an action must, of course, equal or exceed the expected costs. Second, opportunism, defined as self-interest with guile, effectively destroys the free and perfect information assumptions of neoclassical economic theory. Thus, information, its cost and its distribution become important in assessing efficiency. Williamson (1983) and Akerlof (1970) drive this point home. Allowing for temporal effects and informational effects, the combination of which leads to uncertainty, is perhaps Williamson's greatest insight. People are going to attempt to choose a governance structure, for their affairs, which they believe will limit the transaction costs they face. In such a search the most important factor may well be to limit the ability of those with whom they interact to act opportunistically (Williamson (1986)). It should be noted that while there is an ever expanding literature in economics on this subject, it is beyond the scope of this examination.

Finally it must always be recalled that transactions costs need not cause markets to fail. Indeed, transactions costs will always be present in any transaction even if they only extend to the time lost to go to a store. The true challenge of transaction costs is to achieve an institutional structure that minimizes them as their elimination is impossible.

3.3 Institutions

At their core, both market failure in the neo-classical sense and the failure to achieve the neo-classical equilibrium, are due to transaction costs. This amounts to an

institutional structure that fails to achieve the assumptions of the neoclassical competitive equilibrium, and hence to an allocation of resources that is not consistent with that equilibrium.

Decisions respecting habitat that have led to a shortage of habitat are no different in this regard. Suboptimal levels of habitat arising in either a regulated or an unregulated market for habitat are the result of the decisions being made within an inappropriate institutional structure.

It is received theory that economic agents want as much as they can get for as little as they have to pay. This implies that they will seek to lower any and all costs that they face and that they will not act out of altruism. When the assumption of opportunism is added, the agents are allowed to act with guile. That is, agents may attempt to take advantage of any opportunity that presents itself to them, provided they believe that they can successfully take advantage of the opportunity. This implies that agents can act in a manner prior to a certain or expected event (their **ex ante** position) to insure that they are in the best possible position after the event (their **ex post** position). This end will be accomplished by utilizing any advantage, informational or otherwise, that they possess or can acquire even should it cause to worsen the **ex post** position of other agent or agents in the economy. Thus, even agents who recognize that habitat is not available in sufficient quantities, a realization complicated by the grasp of how much habitat is indeed

necessary to sustain human existence, will demand less habitat than necessary and free ride on that habitat supplied by others.

Habitat viewed only as a necessary use of land for the preservation of human existence is, in essence, a public good, and thus subject to the problem of free riding. That is, habitat is something that the owner of the habitat cannot exclude others from enjoying the humanity maintaining biodiversity benefits that flow from the habitat. If someone is prepared to pay to provide level of habitat because he or she receives utility from watching burrowing owls or some other species then all other member of society gain the biodiversity advantage to human existence accompanying that expenditure. The person who makes the original investment in the habitat has no way to extract from society any of the benefits it receives from that investment. Thus, a boundedly rational opportunistic agent will not invest in habitat, preferring others to make the investment from which he/she can extract the benefit. Unfortunately when everyone is boundedly rational and opportunistic, everyone will be inclined to make the same decision and thus there will be under investment in habitat. That is, as people free ride you get the classic under investment in the public good noted by economic theory. Therefore, even if society's preferences change over time toward increased populations of endangered species, free riding could, but need not necessarily, result in continued under investment in habitat.

Whether or not the investment in habitat accorded by a change in societal preferences will achieve optimality, will depend upon the relationship between the marginal societal and private benefits, and the private marginal cost of habitat. It is undisputed in economic theory that in a free competitive market that individual economic agents equate the marginal benefit they receive to the marginal cost they incur to receive the benefit. Thus, following a change in preferences, it is possible that there will be a sufficient number of agents who value habitat to compensate for the free riders and arrive at a level of habitat sufficient to insure sustainable human existence. That this is not presently occurring is evidenced by the fact of the existence of the public concern respecting endangered species. Thus the ability to free ride has generated a free market outcome that generates a suboptimal allocation of habitat because of the wedge driven between private and social benefits at the margin by free riding.

Unfortunately, the ability to free ride is not the only problem that can create a lowering of the relative price of habitat. Economic theory holds that the decisions on the use of land are going to be made, by a rational agent, on the basis of the highest value use to which the land can be put. That is, the rational agent is going to choose that use for land which yields the greatest net present valued returns from the land. This means that anything that affects the price of the output of the land, like a deficiency payment for grain production, or the cost structure of a particular use, like a grain transportation subsidy, can affect the agents best use. Thus institutions in general and laws in particular will have an effect on how decisions are made. Policy regimes that distort the private

agents' marginal benefit may distort land use decisions and thus can affect the amount of habitat available.

As the new institutional economics literature has developed two things have become eminently clear. The institutional environment that a decision-maker faces affects the decision made. Secondly, institutional environments are not consistent over geo-political boundaries or over time within a particular geo-political unit. Thus, as institutions change, the decisions of self-interested decision-makers may also change. This is because the incentives, both positive and negative, that these decision-makers face change as the institutional environment changes. This further implies that as the decisions change the resulting allocation of resources change. Thus different institutional arrangements can result in different allocations even if identical decision-makers, under the different institutional arrangements, commence with a common endowment to take to the market. The allocation of resources that an economy will ultimately arrive at will reflect both the individual actions of agents in the market and the collective action of these individuals in determining the institutional structure.

3.3.1 Government Policy and Incentives

In Saskatchewan not only does the incentive for under investment associated with the free rider problem affect the amount of available habitat, but government policies can also have an effect. The Gross Revenue Insurance Plan and the grain transportation

subsidy under the **Western Grain Transportation Act** both had negative effects on habitat prior to their repeals. This is because the rational economic agent is going to make land use decisions based on the costs and benefits that the agent actually sees. This can be exhibited by considering a landowner facing the decision of whether or not to place native short grass prairie under cultivation as wheat land. The landowner, as a perfect competitor, will make his production decision based on marginal cost pricing. That is, the landowner will want to cultivate only the number of acres necessary to give him the quantity of wheat such that the marginal cost of producing the last acre of wheat is equal to the price he actually receives for it at his farm gate. As the price that the farmer receives is the world price less the basis, which includes transportation cost, for any given world price the farm gate price in the absence of the transportation subsidy is going to be lower than the farm gate price in the presence of the subsidy by the amount of the subsidy. Hence, removal of the subsidy lowers farm gate price and, for a marginal cost pricer, will lower the optimal quantity of the good produced, and thus lower the demand for the factors of production necessary to produce the good. In the example of wheat one of those factors is land. Thus, in the absence of a transportation subsidy, short grass prairie is less likely to be put under cultivation.

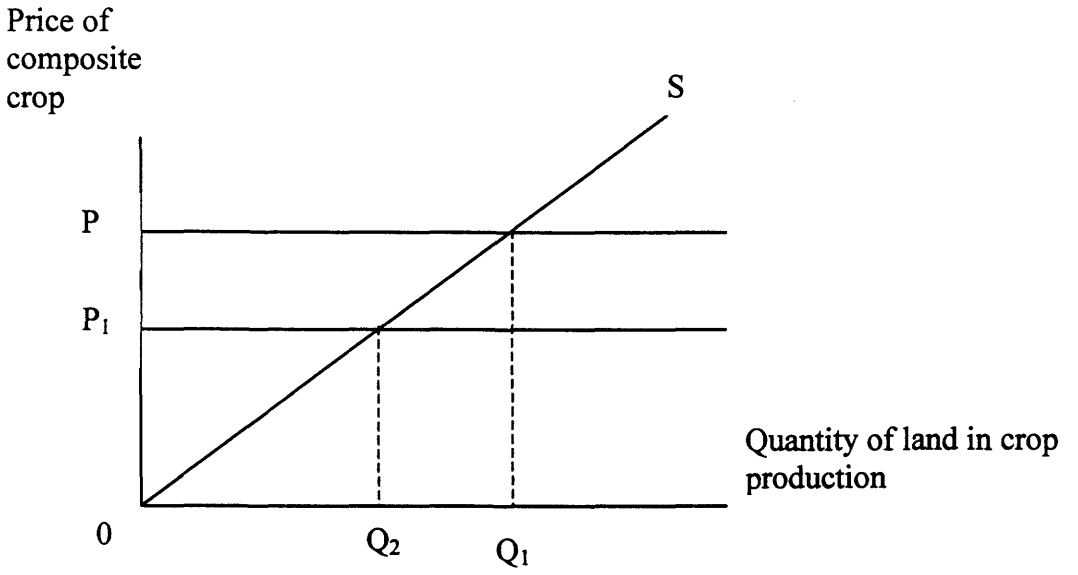
The case for the Gross Revenue Insurance Program is even simpler to see. For payment of a premium the Program would guarantee premium payers a contracted quantity of production at a contracted price. This essentially establishes a return floor for

any particular piece of ground. Given the relatively generous nature of the program, land would have to have been pretty poor before a rational agent would opt not to cultivate it.

3.3.2 The Example of a Transportation Subsidy

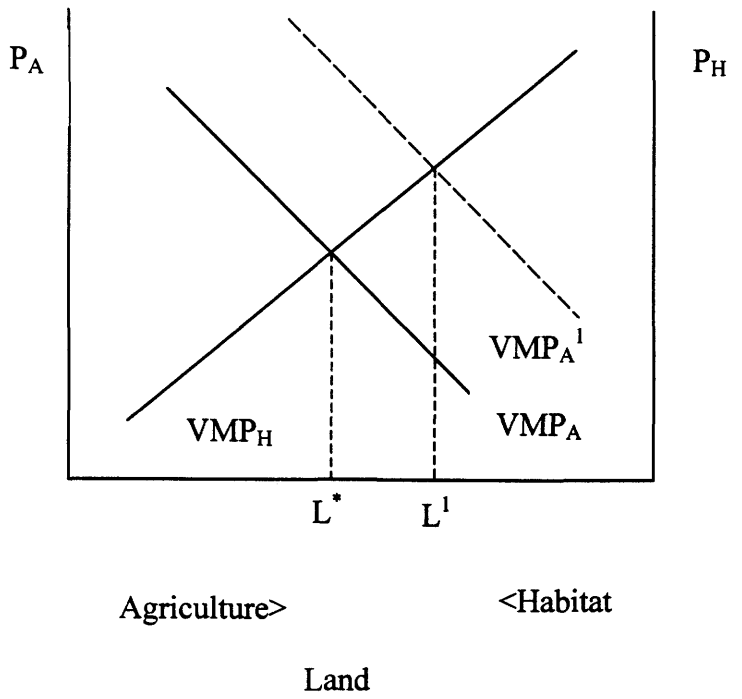
Graphically, for a transportation subsidy, this is shown in figure 3.3, by taking a production function for a composite field crop, Q, as a function of land, L, and some other composite input, X, such that $Q = f(L,X)$. Assuming that the producer is a perfect competitor yields a flat price line, p, that is any one producer cannot affect the price. Allowing then for an institutional change, removing a transportation subsidy, drops the price to p_1. The removal of the subsidy shifts the amount of the composite field crop produced from Q_1 to Q_2. Making the standard assumption that $f^1_L > 0$, suggests that the amount of land dedicated to composite field crop production after removal of the subsidy, L_2, must be less than the amount of land used for production of the composite field crop while the subsidy is in place, L_1. These results can be fairly simply generalized mathematically using a Muth model (Gardner (1987)). It bears notice that following the abandonment of GRIP and the transportation subsidy under the **Western Grain Transportation Act**, Saskatchewan Agriculture and Food reports that pasture acreage in the Province of Saskatchewan has increased by over three hundred thousand acres between 1991 and 1996 (Agricultural Statistics (1996)).

Figure 3.3 The Effect of the Removal of a Transportation Subsidy on Land Use Decisions.



A more direct way to consider the same phenomena is exhibited in figure 3.4. At the equilibrium where the value of the marginal product from using land for agriculture, VMP_A, equals the value of the marginal product from using land for habitat, VMP_H, the social optimum, L^*, divides the total amount of land available into the optimal levels of habitat and agricultural land necessary for sustainable human existence. P_A and P_H are the price of land used for agriculture and habitat respectively. Introducing a transportation subsidy for agricultural products increases the price of those products and shifts the VMP_A curve up and to the right to VMP_A^1. This shift generates the new suboptimal division of available land between agriculture and habitat, L^1, which has more agricultural land and less habitat then L^*.

Figure 3.4 Effect on the Allocation of Land Between Agricultural and Habitat Uses of Introducing a Transportation Subsidy on Agricultural Products



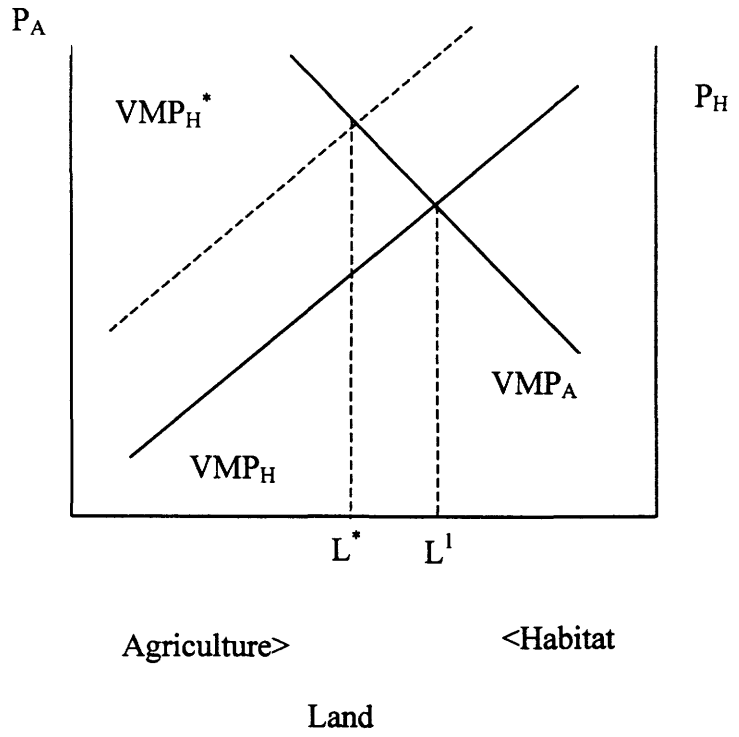
3.3.3 An Example of Changing Property Rights

The manner in which the state decides to define and protect property rights can have a huge effect on the manner in which land use decisions are made. The free rider problem observed earlier is a classic example of this. If the property rights regime were structured to allow landowners to extract from the free riders the value of the marginal product of habitat would increase, and more habitat would be created.

Consider Figure 3.5 where the original equilibrium, L^1, divides the total amount of land available into some suboptimal levels of habitat and agricultural land. Where P_A and P_H are the price of land used for agriculture and habitat respectively. Now enact a new property rights regime that allows landowners to extract the benefits that others gain from his or her investment in habitat. This essentially increases the price of habitat and shifts the VMP_H curve up and to the left to VMP_H^*. This shift generates the new optimal division of available land between agriculture and habitat, L^*, which has less agricultural land and more habitat then L^1.

Thus, economic theory suggests two different causes that underlie the habitat loss driven endangered species problem. The first is, of course, the lack of institutional structures to address the free rider's disincentive to invest in a public good, or the property rights problem. The second and perhaps broader contributor being, the incentives to convert habitat to agricultural land inherent in the existing and recent institutional structures. It would seem that a policy bundle intended to solve the endangered species problem that ignores these two causes will be of questionable efficiency. Put at its simplest the problem is not merely one of economics or one of the laws of Canada, but is one generated out of the feedback effects between the two. That is, the market solution will be driven by the underlying legal structure, while at the same time decisions respecting responses to the underlying legal structure will be made by

Figure 3.5 Effect on the Allocation of Land Between Agricultural and Habitat Uses of Changing Property Rights to Allow Landowners to Extract Others Benefits



individual agents on utility optimizing criterion. Thus, a grasp of both the economics and the underlying legal structure will allow a more complete understanding of the problem.

CHAPTER FOUR

THE UNITED STATES' EXPERIMENT IN LEGISLATIVELY PROTECTING ENDANGERED SPECIES FROM A THEORETICAL POINT OF VIEW

4.1 A Model of Implementation

The perceived problems with the Act, respecting implementation and compliance, highlighted above can be predicted by existing economic theory. The explanation of why individual decision-makers may chose not to obey the law can be enhanced by examining jurisprudence and some of the other social sciences.

4.1.1 The Theory of Transaction Cost Politics

The transaction costs paradigm differs from the neoclassical, and thus, the rationale for North's claim becomes evident:

> Rational choice models in politics have applied the basic assumptions of neoclassical economic theory to politics. Those assumptions include instrumental rationality and the notion (usually implicit) of efficient markets. I believe that the uncritical acceptance of both of these assumptions has led political theory astray. A transaction costs theory of politics is built on the assumptions of costly information, of subjective models on the part of the actors to explain their environment, and of imperfect enforcement of agreements. Choices employing such models result in high political transaction costs that make political markets very imperfect, I believe that modifying the standard rational choice model by incorporating into it transaction cost theory can substantially increase the explanatory power of the model and make more sense out of the political markets we observe. (North (1990): 335 footnotes omitted)

North proceeds to examine what a rational choice model of the democratic political process might look like and advances the idea he called transaction costs politics.

> Transaction costs are the costs of measuring and enforcing agreements. In economies, what are measured are the valuable attributes of goods and services or the performance of agents; enforcement consists of the costs associated with realizing the terms of exchange. Measurement consists of the physical and property right dimensions to goods and services and the performance characteristics of agents. While measurement can frequently be costly, the physical dimensions have objective characteristics (size, weight, color, etc.) and the property rights dimensions are defined in legal terms. Competition plays a critical role in reducing enforcement costs. The judicial system provides coercive enforcement. Even so economic markets throughout history and in the present world are frequently very imperfect, beset by high transaction costs and defined by institutions that produce incentives that work against economic efficiency. Indeed, creating markets is the key issue to creating productive economies.
>
> Political markets are far more prone to inefficiency. The reason is straight forward. It is extraordinarily difficult to measure what is being exchanged in political markets and in consequence to enforce agreements. (North (1990): 362)

Dixit expands upon North's idea of transaction costs politics in a manner particularly relevant to the issues addressed in this study. Dixit postulates that the relationship between citizen, legislator and bureaucratic regulator is a multi-task multi-principal agent relationship. As the name suggests Dixit put forth a model in which an agent (agency) is charged with multiple tasks, say listing endangered species, protecting the habitat of listed species, and enforcing the Act. While carrying out these multiple tasks the agent is, at least in some sense, answerable to several potentially different principals. These principals could include Congress, the executive branch, the general

public, various interest groups, and perhaps even the press. Each of these potential principals may have divergent if not contradictory goals.

In the case of a single principal, Dixit's approach is built upon the premise that the world is one that conforms to the transaction costs paradigm. This has two important consequences. First, the decision-makers are boundedly rational and opportunistic. Second, information is imperfect, costly and asymmetrically distributed. This, of course, suggests that while any player can understand and optimize his or her **ex ante** position that this is not necessarily true of his or her **ex post** position. It further suggests that there may exist other players who not only have a better knowledge as to the **ex post** result of an **ex ante** decision by a particular player, but that they may, in fact, have the ability to affect the **ex post** position of the first player to that player's detriment and to their advantage. This is particularly the case if the players with the superior information have the ability to respond to the initiatives of the players with the inferior information. Dixit's model explicitly assumes that the tasks the agent faces at least partially compete for the agent's time and effort and that the priorities of the principal and the agent diverge. Dixit suggests, as possible sources for such divergence, that the parties have different concepts of the type of effort a task requires or that new tasks may have lower value to an existing agency in terms of its original mission (Dixit (1996): 96).

The principal's problem then becomes arriving at an incentive structure that prompts the agent to behave in the manner desired by the principal. That is, the principal

must design a system of penalties and payoffs which make it in the agent's best interest to pursue the principal's desires.

The first question to address is: What is the nature of the incentives available? Dixit observes:

> Even in economic contexts, rewards or penalties may be financial or nonmonetary. The former category must be interpreted broadly to include career concerns, that is, future material rewards as well as the immediate payoff; similarly, a broad interpretation of nonmonetary incentives includes status, power, and job satisfaction. In political contexts the nonfinancial aspects are likely to be more important than in economics, Even with this understanding, however, it is commonly observed that incentives for policy makers are quite low powered; the marginal rewards for producing an outcome of greater value to society, or the marginal penalties for doing worse, are generally a very low percentage of the value added or lost. A bureaucrat in the Office of Management and Budget, or an international trade negotiator, can take actions that benefit or hurt the economy to the tune of billions of dollars, but the effect on his own compensation, monetary or otherwise, is at most a very tiny fraction of this. Much of the commonly held belief that political processes and institutions cope poorly with agency problems can be attributed to the low power of their incentives. (Dixit (1996): 94-95)

Dixit then goes on to observe that the choice of incentives schemes is going to be a function of how observable the different inputs and outputs of the system are, and of the difference in values. That is, the lesser the degree of informational asymmetry between the principal and the agent the easier the agent will be to control. In support of these observations Dixit offers the following example:

> An example close to home will make the point clear, University professors have two tasks, teaching and research. The output of research is relatively easily measurable in terms of prestigious publication and citations; that of teaching is more nebulous because the real effects are

> long term, and the students' evaluations have their own biases. If the university considered each task and its incentives in isolation, it would recognize the different precisions of information and set up a high-powered reward scheme for research and a low-powered one for teaching; but that would induce professors to divert effort away from teaching and into research. Therefore, considering the two together, the university is forced to reduce the power of its scheme for rewarding research.[7][7. A better solution may be greater specialization among universities. Some can place more emphasis and reward on research, while others concentrate on teaching; then, each will attract the type of students who value its favored activity relatively more highly. In the context of politics, such specialization is not be[sic] feasible for national governments, although it may be for localities within a country.]
>
> Now introduce a third activity, outside consulting, that is primarily of value to the professor rather than to the university. If the reward schemes for teaching *and* research are low-powered for the reasons explained above, the teachers will divert their effort into consulting. The university could cope with this by increasing the power of the incentives for teaching and research together, but that would be a costly alternative because teaching effort is not easily observable. . . . The university therefore instead prohibits consulting, or at least restricts the time allowed for it. Some consulting will be allowed if that makes it easier to ensure that the professor gets enough utility from the whole bundle of activities to be willing to work for the university, that is, to satisfy the professor's individual rationality (participation) constraint. But this calculation will involve comparing the average product of consulting time and marginal reward for teaching and research. A full social optimum would equate the marginal product of the two. This departure from the ideal is the unavoidable cost of the informational asymmetry in this case. (Dixit (1996): 96-97)

As an aside, it might be thought that firing is the ultimate high-power incentive. One need only consider Dixit's example above and consider how difficult it is to fire a tenured professor, to see that the power of firing as an incentive becomes suspect.

Now to aggravate an intractable problem, what happens if an agent faces multiple principals? If the principals have a common goal the problem remains essentially the same. Should the principal's goals be divergent, the agent would be expected to play one

principal off against the other. Unless, of course, one principal can punish the agent for doing another principal's bidding. In this case the principals have no incentive to offer the agent anything but low-power incentives, as high-power incentives, such as a monetary bribe, could be taxed from the agent by the other principal (Dixit (1996): 99-100). This follows because the first principal is not likely to be prepared to enrich the other principal through the agent if he can buy off the other principal directly at a lower cost, since the agent will not be taking a cut. It is clear that if Dixit is correct that several things are going to be required before one will see anything but low-powered incentives. The tie between effort and results on the part of the agent are going to have to be known and the results are going to have to be relatively easily discernible, else the principal has no reason to offer the incentive. Why would any one pay for something they do not have to pay for, or why would they pay for something if they can not tell if it was delivered. The second requirement is that the other principal(s) not be readily able to ascertain the tie between the ultimate result and the original principal's high-powered incentive, or if they can perceive of the tie that they be unable to punish the agent. Thus, the theory, incidentally, provides a rationale for the prohibition on bribery, at least as far as it exists as an exploitation of informational asymmetry.

4.1.2 The Predictions Respecting the Act

In a modern constitutional democracy such as the United States, or in Canada, it is clear that only, in the immediate pre-election period, are members of the electorate principals. It is equally clear that only those members of the bureaucracy engaged in

policy implementation and enforcement, and in no way involved in policy formation, thus lower level bureaucrats, are agents and purely agents, save when they act as principals in their guise as electors. It is also clear that it is not necessary to further exacerbate the problem by including the numerous permutations of potential principal agent relationships to see that the model predicts the rise of politicization within regulatory decision making. The low level bureaucrat may well be able to avoid the politicization, but the minute that one becomes a principal in one relationship and an agent in another, within the same structure, one it seems is, by definition, in a political environment. This becomes clear when you consider that the paradigm role reverser in the system is the elected official, who is also the ultimate political figure in the structure. The level of politicization is, of course, going to shift as you move up the bureaucratic ladder.

Scarcity of resources is, in some sense, a complaint that can be leveled against any rational choice model. If resources are sufficient to meet all competing ends then choice, whether rational or otherwise does not arise. That is, if resources are sufficient to accomplish everything why would everything not be accomplished? When, however, scarce resources are to be allocated by the state on public policy grounds, where there is even the least divergence in public opinion over the correct allocation of those resources, there will be those who feel that the allocation chosen was incorrect. Consider as an example the American budgetary process. Assume that Congress is an agent whose payoff is reelection. Further assume it has one million dollars, which can go to protecting endanger species, or to the military, or it can be divided in some manner between

environmental protection and the military. Alternatively Congress can raise taxes so that it spend a million on each. Assume, further, that the general public, as principals, is divided into thirds, one-third in favor of all the money going for protection, one-third want all the money to go to the military, one-third does not want taxes raised. Next assume that the public will vote in accordance to their preference, if Congress complies with their desires they will vote for them, if not against them. Whatever Congress should choose to do at a minimum one-third of the electorate is going to be displeased with their allocation and not vote for them. Granted, this example abstracts from Dixit's transaction costs postulates, however the adage that everyone cannot be pleased all the time will continue to hold, although less strongly once you allow the players in the game to cheat, steal and lie, and throw in detection problems.

Several implementation problems flow from, or are perhaps evidence of, bounded rationality. Imprecision can flow from at least two sources. The first is lack of knowledge. The second is the wish to afford a future opportunity for opportunistic behavior, to equivocate if you will. Both flow out of bounded rationality. Lack of information is by definition bounded rationality. With regard to opportunities for opportunistic behavior, under all of Dixit's assumptions, a legislator can choose at time A to support a particular piece of legislation phrased in a particular manner. At time B, the credibility of that legislator's claim that the occurrence or the interpretation of the legislation that has angered some group or the other was not what he intended, can only be enhanced the more imprecise the language adopted at time A. As informational

asymmetry makes it difficult to assess the validity of the legislator's claim, imprecision should be expected. An analogous argument can be made for the granting of discretion. Why take the blame if you can pass it on to someone else, particularly someone with greater technical knowledge than you possess.

The manner in which uncertainty is discounted and to a lesser extent the unit of protection, are also to be expected from bounded rationality. Beginning with units of protection, the agent legislator's claim will be that species by species, with the accompanying ecosystem for each species was, at the time, the best expert advice available. It will likely also be observed that since this is a current professional dispute, who is Congress to intervene. It must be recalled, that this is also the result of a political process, and as such a compromise of sorts, which returns us to the notion of pleasing everyone. The method used to discount the future is a technical issue subject to highly technical professional disagreement. These sorts of debates become rooted in a lack of knowledge. The best way to determine who has the correct manner of discounting events over the next century is to wait a hundred years and see who comes closest. This is, unfortunately, not an available option when the decision must be made today. The determination of the sufficiency of habitat protection and the adequacy of the recovery planning process, also suffer from lack of knowledge. While there is general agreement that matters appear to be getting worse, just how much worse and what is the best method of correcting the situation appear to be questions over which reasonable, informed people have sincere and sometimes profound differences of opinion. Again, some of these

debates, particularly questions such as what is adequate or sufficient, have fallen and continue to fall into the political arena.

Undue attention to high profile species falls straight from Dixit's discussion of incentives. Politicians and bureaucrats alike are going to, if they are given a choice, dedicate their time and energy to those things that the citizens care the most about. It is the electorate, after all, that pay the salaries of both politicians and bureaucrats (Dixit (1996): 96).

Finally, inadequate interagency consultation is a necessary corollary to Dixit's discussion of incentives. Boundedly rational opportunistic individuals will desire to hog the glory, sharing only the blame.

After **Tennessee Valley Authority v Hill** insufficient consideration of economic factors became certain, frankly, it became mandated because of the dicta in that decision. This has become an implementation problem in two senses: first it affects compliance decisions, second it will further tend to politicize the system. Implementation of policy without regard to the economic well being of the citizens is going to cause problems. Given the politicization of the system that the model predicts, any senior bureaucrat in any democratic country is going to be hesitant to implement policy that adversely affects the well being of the voters to whom his or her political masters answer.

While the models addressed above deal effectively with Clark's view of most of the problems associated with implementation of the Act, they fail to address the problem of compliance. Compliance might be one of the least understood areas of study of human decision making.

4.2 A Model of Compliance

4.2.1 The Theory

That the mere passing of legislation is not sufficient to insure general compliance with that legislation may not be self evident. In the **Concept of Law**, H. L. A. Hart sets forth the notion of humans as internalists who obey the law essentially because it is the law, and externalists who obey the law, if they obey it at all, from fear of sanction, either from the community or by the law itself (Hart (1961): 86-88).

From Hart it becomes clear that if the external pressures are not severe enough the externalist may not obey the law. Gary Becker casts the question of compliance in terms of costs and benefits. Becker says:

> The approach taken here follows the economists' usual analysis of choice and assumes that a person commits an offense if the expected utility to him exceeds the utility he could get by using his time and other resources at other activities. Some persons become "criminals," therefore, not because their basic motivation differs from that of other persons, but because their benefits and costs differ (Becker (1974): 9)

That is, Becker would have an individual faced with the choice of complying with or breaking the law, conduct a cost benefit analysis and act in accordance with the results of

that analysis. Specifically, the individual will calculate his expected utility from breaching the law, which is equal to the utility he expects to gain from acting illegally less the utility he must surrender in order to act illegally (i.e. what it actually cost him to perform the illegal act) less the expected utility lost due to detection and the consequent liability. The expected utility lost due to detection and liability is the probability of detection times the utility lost by being held liable, assuming that liability automatically follows detection. Thus, if the expected utility of breaking the law is positive one will break the law, if it is negative one will comply and if it is zero one will be indifferent between the two outcomes. This is, of course, the idea that underpins the theory of efficient breach in contract law. If the potential damage award one faces for breaching the contract is less than the potential losses one will face by performing the contract one will breach the contract. If however, the award exceeds the losses one will perform.

Unfortunately, the world is only this simple a place if the costs and the benefits are properly accounted for. There exists some work, both theoretical and empirical that suggest there may be a gain to an individual to act in a socially responsible manner. Arrow has observed:

> Thus there are two types of situation in which the simple rule of maximizing profits is socially inefficient: the case in which costs are not paid for, as in pollution, and the case in which the seller has considerably more knowledge about his product than the buyer. (Arrow (1973): 309)

The two cases have come to be known in the economic literature as externalities and information asymmetry, respectively. Arrow then goes on to conclude that should firms or individuals act in a socially responsible manner and thus not maximize profits or

utility, by not taking advantage of their superior knowledge or limiting their pollution discharges, there is a net gain which can be distributed throughout society. Arrow does not suggest that this sort of action will arise out of altruism. In fact, he says:

> Now I've said that ethical codes are desirable. It does not follow that they will come about. An ethical code is useful only if it is widely accepted. Its implications for specific behavior must be moderately clear, and above all it must be clearly perceived that the acceptance of these ethical obligations by everybody does involve mutual gain (Arrow (1973): 315).

Should such a code be generally honored there is an advantage to any one firm to cheat. As Arrow observes:

> The code may be of value to the running of the system as a whole, it may be of value to all firms if all firms maintain it, and yet it will be to the advantage of any one firm to cheat - in fact the more so, the more other firms are sticking to it (Arrow (1973): 315).

The question then becomes why, or more specifically under what conditions, will a firm not cheat. From game theory it can be shown that in an infinitely repeated game where the other player(s) have the ability to punish the cheater that the cooperative (non-cheating) equilibrium prevails (Varian (1992): 270-271, Friedman (1990): 156-157). Thus, reputation, if you will, matters, at least in theory. In questions of compliance with the law, this suggest that it may be in one's long run best interest to forego a short run gain obtainable through non-compliance and comply with the law in order to preserve reputation. Therefore, when the decision to comply is made these sorts of long run costs should be included in the cost benefit accounting.

Kahneman, Knetsch and Thaler empirically examined the question of punishment of cheating and found that 68% of their urban Canadian sample would incur the

additional expense of five minutes travel time to avoid dealing with a pharmacy that took advantage of temporary market power, and that 69% of their sample would incur the same cost to avoid a pharmacy they believed was discriminating against its elderly employees (Kahneman, Knetsch and Thaler (1986): 736). In the same study they also concluded that there exists some form of community standard as to what is unfair behavior for retailers in price setting and in their dealings with their employees. They note that such standards are likely to vary in specifics across communities (Kahneman, Knetsch and Thaler (1986): 737).

Community standards of fairness could be expected to affect the cost benefit analysis to determine the question of compliance with law. If the law is perceived in the community to be unfair it is conceivable that the reputational effects of breaking that law will be lessened. It is conceivable that those effects could be as low a zero, or, perhaps, even positive. Being convicted for the illegal processing of salt does not appear to have harmed Ghandi's reputation, and, in fact, appears to have enhanced it.

While not dealing with fairness, per se, Tom Tyler, did a study, in Chicago, in which he found statistically significant correlation between perceptions of the legitimacy of authority and compliance with it. That is, authority that was perceived to be legitimate was more likely to be complied with than authority that was not perceived as legitimate. From this study Tyler conclude that normative values are more important in compliance questions than was previously believed (Tyler (1990): 178). It would seem that

perceptions of fairness would be one of those normative values which Tyler avers matter, in questions of compliance.

4.2.2 The Predictions Respecting the Act

So what does that lead one to expect about compliance with the **Endangered Species Act, 1973**? It seems unlikely that the community of landowners forced by the public to bear the costs of protecting endangered species as they are under the Act would view the Act fair. Species are listed without any reference to the economic consequences of their listing. Once they are listed the presence of the species brings forth the various protections available under the Act to the species, this includes the protection of habitat and the ban on taking, even on private land. Thus, the presence of a listed species on private land constrains the uses that the owner of the land may make of the land. All other things being equal this will deflate the price of the land; given two identical pieces of property, one with constrained uses one with unconstrained uses, which will a buyer pay more for? Unless the purchaser gains utility from the species and the act of protecting it, the answer is clearly the land with the unconstrained use. In addition it is conceivable that the presence of a listed species will alter the management systems available for use on the property, requiring more costly management. Consider the case of Wilton, New York where the presence of a listed butterfly required that the city's mosquito control program adopt a more expensive chemical to avoid killing the butterflies (Mann and Plummer (1996): 103). In effect the Act imposes an externality,

free riders, upon landowners that have a listed species on their property. These landowners are in fact bearing the cost of protecting the listed species for the general public. This is the mirror image of an industrial externality were the few force the many to bear the cost. Given that the "not in my backyard" opposition to any particular development tends to base its arguments in terms of the unfairness to them of being saddled with the externality would it be surprising that owners of property on which a listed species resides would believe themselves treated unfairly?

If in the landowning communities, the Act is perceived as unfair, the decision not to comply is not likely to be affected by fairness or reputational concerns. Thus, it would seem that the decision to comply is going to be based on the simple cost benefit analysis proposed by Becker. The rational land owner is going to estimate the decrease of the market value of the land, the additional management costs, if any, the cost of any property damage that the listed species may inflict, that is things like stock or stored grain losses; these costs would then be summed and discounted for the length of time that the owner intended to hold the land. The expected utility of breaking the law, in monetary terms, would be the net present value of these avoided costs, less the actual cost measured in monetary terms of breaking the law. The actual costs of breaking the law would include cash costs such as bullets or poison and the time cost. The cost of detection would be the probability of detection times the cost of the penalty as set out in section 11 of the Act. Should one be incarcerated the cost will be the opportunity cost of sitting in prison. In the event that one is an employee that would amount, at a minimum,

to foregone wages, if one is self employed it would, at a minimum, be the cost of hiring replacement labor. There may also be some incidental costs such as difficulty in obtaining visas and government permits and perhaps even subsequent employment. These costs would also be discounted.

The probability of detection will drive the compliance decision. It is potentially very low, particularly in the rural United States. This can be hypothesized as the expected case, because detection is a function of monitoring. Listed species are by definition rare, consequently in order to monitor for their protection you have to know where to find them. If one is dealing with members of the species that are unknown to the authorities, it seems highly unlikely that they would know where to look. Secondly, monitoring is expensive, it requires that the regulator have employees out in the heartland, employees have to be paid and the heartland is vast area where strangers are readily identified and the population may not be hospitable, thus potentially requiring large numbers of employees to insure effective monitoring. If one is in the center of a 100 square mile western Montana ranch the odds that there is anyone within 5 miles of you may well be pretty low. The chances that that person would work for the Fish and Wildlife Service may well approach insignificant. Given the foregoing, economic theory suggests that the rational landowner faced with the presence of a listed species has a large incentive to shoot, shovel and shut up.

As with the complaints leveled against the Act with respect to implementation the theory expounded above explains why the compliance complaints leveled at the Act might be expected. The question that must now be faced, as was pointed out earlier, is the fitness of the Act as a model for the Bill, given the admittedly different institutional structures in Canada and the United States.

CHAPTER FIVE

THE ACT AS A MODEL FOR THE BILL

5.1 The Policy Analyst's Problem

How can a policy analyst rationally analyze policy that has no track record to facilitate the examination of the effects of the policy? Neo-classical welfare economics essentially rates policies based on the amount of distortion between the neo-classical perfectly competitive equilibrium and the equilibrium achieved with the policy in place that achieves the policy goal. The tool used to rate the policy is the total available sum of consumer and producer surplus. That is, the area above the supply curve, or in the case of habit the marginal social cost curve, below the demand curve, or in the case of habitat the marginal social benefit curve, and to the left of the equilibrium. The preferred policy is the one that has the greatest total surplus, while achieving it at the lowest possible cost. This will be the equilibrium point were the marginal social benefit of more habitat is exactly equal to the cost at the margin that society must expend to achieve that last unit of habitat. Thus, the preferred policy will be that policy that equates the marginal social benefit of habitat to its marginal social cost.

This requires that a policy, to bear consideration, achieve its objectives. When dealing with policy that has yet to be implemented the determination of whether or not the policy will achieve its objective can pose a considerable challenge. This challenge

might be overcome, if a policy has been implemented elsewhere. This allows for an examination of the policy, as implemented elsewhere, to ascertain its strengths and weaknesses. The strengths and weaknesses can then be modeled. Proposed policies can then be examined to ascertain whether or not they have the theoretical ability to take advantage of the modeled strengths and address the modeled weaknesses in the policy implemented elsewhere. Utilizing such a methodology requires that the analyst be constantly vigilant in recognizing and accounting for the differences between where the implemented policy was implemented and where the proposed policy is to be examined. This caution is equally necessary when moving between problems within a polity, as it is when looking at cross political jurisdiction solutions to identical problems, as will be proposed here. The implemented policy, to be used as a model, shall be the United States **Endangered Species Act, 1973**. It will, of course, always have to be recalled that the Act is American legislation that is somewhat different than the Bill, and is intended to operate under a different constitutional structure than the Bill.

5.2 A Comparison of Canada's and United States' Institutional Structures

That the United States and Canada have different institutional structures is undeniable. The two countries have fundamentally different forms of government. The United States is a federal republic. Canada is a federal constitutional monarchy. The question that a policy analyst must address is the determination of whether or not there

are sufficient similarities between these different constitutional arrangements to expect similar responses from similar policies.

Both forms of government are essentially representative democracies. Both forms of government claim to proceed from England's Glorious Revolution of 1688, and to be based upon the liberal principals of the Enlightenment used to justify the Glorious Revolution. This has come to mean that both forms of government are founded on several key principals. These include, the Rule of Law, private property, that the citizen has rights that are unassailable by the state, and eventually, the adoption of universal adult suffrage.

The similarities do not end with the fact that both forms of government find their origins in what is essentially liberal political theory. Both Canada and the United States have relatively rigid written constitutions. Although, given its current amending formula, Canada's is likely the more rigid. Both of these written constitutions contain constitutional protection of the citizen from the state. The American Constitution has, of course, the **Bill of Rights**, while Canada's has the **Charter of Rights and Freedoms**. Both documents protect essentially the activities on the parts of the citizens, except for the inclusion of property in the **Bill of Rights**. The absence of a not withstanding clause, and the introductory limitation of rights which imposes limits on rights that are "prescribed by law and reasonably and demonstrably justified in a free and democratic society", suggest that individual liberty was and continues to be taken more seriously by

Americans than Canadians. The two countries also share a similar legal system, one based largely on English Common Law, but both of which have been influenced by European Law, because of the presence of former non-English colonies within the borders of the current nation states. These legal systems hold the courts as the final arbitrators of inter citizen disputes, of all constitutional questions, both those that relate to the division of constitutional powers between the two levels of government within the respective federations and between the citizens and the state with regards to the state's ability to infringe upon the citizens' liberty, and finally with the courts' supervisory role over inferior tribunals based upon the prerogative writs under English Law, often referred to as Administrative Law. It bears notice that the American Courts generally have friendlier public interest standing rules than we have in Canada. In as far as standing with respect to endangered species protection is concerned the Bill by section 60 essentially grants public interest standing. These similarities seem to suggest differences between the two forms of government are more matters of form than principle from the perspective of a decision-maker facing existing policy.

With a majority government, in Canada, relying on party discipline the clearest example of the difference in form between the two governments is where power to regulate rests. In Canada at both the federal and provincial levels of government power lies in cabinet. In the United States it is split between the legislative and the executive branches, again at both the national and the state level. In both countries the courts have supervisory roles, but can only act on the complaint that regulation is, for whatever

reason, **ultra virus**, that is beyond the power of the government that made it. Thus when enacting endangered species protection legislation the differences in form, while they can be of extreme importance in other areas such as: who can do what; who do special interest groups lobby or how do special interest groups have to structure their law suits to get something done, do not appear to present any compelling reason to reject the Act as a model for the Bill. Once the policy is in place a decision-maker in either country faces ultimate enforcement of the policy through markedly similar judicial systems.

That there are also differences in the latitudes of the courts to favor the citizen over the state is equally clear. These differences render no more a compelling reason to reject the Act as a model for the Bill than does the difference in form. The American Constitution, as was observed earlier, protects private property, which the Canadian Constitution does not. The American Constitution also places greater limits on the state in its relations with an individual than the Canadian Constitution does. Given the acceptance of the Act by the United States Supreme Court in **Tennessee Valley Authority v. Hill** (98 S.C.R. 2279 (1978)), it would seem that there remains no reason, except perhaps division of powers questions, to expect the Canadian courts to reject a piece of legislation similar to the Act. That is, if the level of interference with individual property and liberty that the Act affords the American government is acceptable in the United States there is no reason to suppose that similar legislation should offend individual liberty in Canada with its more restrictive protections of individual liberty, provided of course that the Government of Canada has the authority under the division of

powers to enact the legislation. Given the dicta of the Supreme Court of Canada in **R. v Hydro Quebec** ([1977] 3SCR 213), the division of powers question also becomes moot. In this decision both the majority and the dissent agreed that the criminal law power under s. 92 (27) of the **Constitution Act, 1867** was broad enough to allow the federal government to enumerate and legislate against crimes against the environment. As then Chief Justice Lamer said in dissent with the concurrence of Sopinka, Iacabucci and Major JJ.:

> That being said, we wish to add that none of this should be read as foredooming future attempts by Parliament to create an effective national –or, indeed international – strategy for the protection of the environment. We agree with La Forest J. that achieving such a strategy is a public purpose of extreme importance and one of the major challenges of our time. There are, in this regard, many measures open to Parliament which will not offend the division of powers set out by the Constitution, notably the creation of environmental crimes. Nothing in our view prevents Parliament from outlawing certain kinds of behaviour on the basis that they are harmful to the environment. But such legislation must actually seek to outlaw this behaviour, not merely regulate it (para 61).

Clearly, the creation of environmental crimes is within the legislative competence of the Government of Canada. The question then becomes, what is a crime? Mr. Justice La Forest of the Supreme Court of Canada said, in **R. J. R. MacDonald Inc. v The Attorney General of Canada**:

> Given the "amorphous" nature of health as a constitutional matter, and the resulting fact that Parliament and the provincial legislatures may both validly legislate in this area, it is important to emphasize once again the plenary nature of the criminal law power. In the *Margarine Reference, supra*, at pp. 49-50, Rand J. made it clear that the protection of "health" is one of the "ordinary ends" served by the criminal law, and that the criminal law power may validly be used to safeguard the public from any "injurious or undesirable effect". The scope of the federal power to create criminal legislation with respect to health matters is broad, and is

> circumscribed only by the requirements that the legislation must contain a prohibition accompanied by a penal sanction and must be directed at a legitimate public health evil. If a given piece of federal legislation contains these features, and if that legislation is not otherwise a "colourable" intrusion upon provincial jurisdiction, then it is valid as criminal law; see *Scowby, supra*, at pp. 237-38.
>
> As I have indicated, it is clear that this legislation is directed at a public health evil and that it contains prohibitions accompanied by penal sanctions. Is it colourable? In my view, it is not. Indeed, it is difficult to conceive what Parliament's purpose could have been in enacting this legislation apart from the reduction of tobacco consumption and the protection of public health. If Parliament's underlying purpose or intent had been to encroach specifically upon the provincial power to regulate advertising, it would surely have enacted legislation applying to advertising in more than one industry. Similarly, if Parliament's intent had been to regulate the tobacco industry as an industry, and not merely to combat the ancillary health effects resulting from tobacco consumption, then it would surely have enacted provisions that relate to such matters as product quality, pricing and labour relations (paras 32-33).

Thus, the federal government can enact valid criminal law provided it enacts a prohibition accompanied by a penal sanction and directed at some legitimate public harm, without being a veiled attempt to usurp provincial legislative competence. That is, it cannot be colourable. Would the Bill have been able to meet this criterion? The preamble speaks eloquently of the value of wildlife and ecosystems and implicitly of the costs of losing them. The Bill, by its preamble sets out the harm it is meant to avoid. The Bill establishes a list of prohibitions, sections 31 though 33. It establishes penal sanctions, 77 through 99. The first part of La Forest's test seems established. Is it colourable? The Bill's effect upon private property under provincial jurisdiction is limited to those situations where the residence of a transboundry endangered species is actually present on the property, section 33. If the Federal Government's intent in proposing the Bill had been to regulate the use of private property in the Provinces, surely

as La Forest, J. observes about the tobacco legislation, they would have found a less hit or miss way to go about it. A scheme that relies upon the existence of the residence of an endangered species, does not lead to particularly predictable effects upon property uses in the Provinces if the intent was other than to protect those species. Thus, it would appear that the Bill should have been able to withstand a constitutional challenge based on the legislative competence of the Government of Canada to enact it.

5.3 The Canadian Endangered Species Act

The Bill uses a listed species criterion similar to the Act. The Bill mandates that if a species, which is defined to include subspecies, is on the best biological evidence, as determined by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (Bill s. 13), in danger of extinction or extirpation that the species will be listed. The Bill allows for five classifications in listing, based upon the level of risk that the species face, these include: extinct, extirpated, endangered, threatened or vulnerable (Bill s. 18). By section 30, once a determination of the status of a species is made by COSEWIC it falls to Cabinet on the advice of the Minister to amend the endangered species list or not. Once listed the species receive the protections enumerated under the Bill. These protections include protection from killing, harming and harassing, it is an offence under the Bill to possess a listed species or any of its body parts, and finally its habitat is protected, if that habitat is located on federally owned or regulated land (s. 31-32), and on private land under the appropriate circumstances (s. 33). Much of the

publicly expressed concern over the Bill tends to arise out of its potential applicability to private property. The Bill only affects private property, by section 33 of the Bill, if the residence of a cross international boundary migratory species, or a species whose range crosses an international boundary is located on private property. The listed species is protected under this scheme but the only habitat protected is the residence of the listed species. The debate about the applicability of the Bill to private property seems to be centered on how broadly the word "residence" is likely to be interpreted by the courts, and how wide a latitude the courts will be prepared to grant under section 33 of the Bill, for a species to be defined as migratory and thus subjecting private property to the Bill. Should these terms be defined broadly enough they will impose a substantial externality upon private landowners in the same manner that the Act imposes an externality on private landowners in the United States.

Section 33 of the Bill reads:

33. The Minister may make regulations prohibiting any person from
    (a) willfully killing, harming, harassing, capturing or taking an individual of a wildlife animal species, other that one mentioned in paragraph 3(1)(a) or (b), if COSEWIC

        (i) has determined that the species migrates across an international boundary of Canada or has a range extending across such a boundary, and
        (ii) has designated the species as an endangered or threatened species, or

    (b) knowingly engaging in activities that damage or destroy the residence of the individual

    Before making the regulations, the Minister must consult the provincial minister of each province in which the regulation will apply.

On the face of section 33 it is clear that the majority of animal species at risk in Saskatchewan, such as whooping cranes, swift foxes, burrowing owls and black footed ferrets (if there are in fact any left in the province) fall within one of the two parameters of migratory, either they cross the border with the United States or their range extends across the border. Consequently, it will depend upon the interpretation of residence to determine how private land in Saskatchewan will be affected by the Bill.

> The Bill's statutory dictionary defines residence as:
>
> "residence" means a specific dwelling place, such as a den, nest or other similar area habitually occupied by an individual during all or part of its life cycle.

If the courts should interpret residence as anything broader than the actual physical place where the listed species actually lives, be that a hole in the ground or a nest in a tree for example, the potential for imposing an externality on private landowners increases. An interpretation of such breadth clearly strains the literal meaning of the words of the definition. An argument in support of a broader interpretation is possible. Such an argument would be have to rely on being able to convince a court that Parliament must have intended that the individual member of the listed species have a sufficient amount of protected space to insure its survival, as opposed to its mere actual physical home. The argument would have to be based on the idea that the whole scheme of the Bill is to protect listed species. It would then have to be argued that it is nonsensical to suppose that Parliament would protect the beast's burrow while allowing it to starve to death. The

argument has been made that protecting the home and allowing the species to starve was what was done by the United States Federal Court, ninth circuit, in the case of the northern spotted owl. Prior to the listing of the owl under the Act in 1990 there was a substantial amount of litigation launched by environmental groups to protect the owls and their habitat from logging activities in the Pacific Northwest (see for example Portland Audubon Society v Lujan (712 F. Supp 1456 (D. Or.), Portland Audubon Society v Lujan (884 F. 2nd 1233 (9th Cir. C of A) or Portland Audubon Society v Hodel (866 F. 2nd 302 (9th Cir. C of A)). Much of this litigation was surrounded with interlocutory injunctions restraining logging in areas around known nesting pairs of owls. One such injunction, apparently in an unreported interlocutory motion surrounding the Hodel litigation, restrained logging within 2.1 miles of the nest of a nesting pair, this suggests just under 14 square miles of protected old growth forest or just under 9000 acres. The acreage protected by this injunction was above the low median range of 1411 acres reported by Yaffe (1994), but below the high median range of 14,271 acres Yaffe (1994) reports. Thus it appears that there is room to argue that American courts have established precedents that fail to protect sufficient habitat for survival of the species, however the decisions were not made under the Act, they did protect some habitat and were related to Federal Forests managed by the Bureau of Land Management. Which interpretation the Courts ultimately adopt may be a moot point.

If private landowners are boundedly rational, opportunistic decision makers, as Williamson (1986) posits them, the mere fact that the argument can be made **ex ante** to

any judicial decision may be sufficient to prompt those landowners to act to avoid the risk of bearing the externality. That is, if landowners credibly believe that their land could be affected by the Bill, should a listed species be present, they can be expected to do what they can to avoid having the externality associated with the listed species fall upon them. This is particularly the case since the landowners have vast knowledge superiority over the regulators when it comes to knowing what is or is not living on their land. This would suggest that there is a good chance that the Bill would have established incentives perverse to its stated objectives much as the Act has. That is to say that there seems to be little reason to reject the Act as a model for the Bill.

5.4 Testable Hypothesis Suggested

If the foregoing is correct it suggests several things that we should expect to be able to see now. It also suggests several things that we can hypothesize as being critical to ascertain the course of future events.

Dixit's model suggests that attempted solutions to the problem will become mired in political debates. That this has occurred and continues to occur is self-evident. The nature of the debate also flows quite readily out of Dixit. The debate does not revolve around the policy goal itself, the protection of endangered species, but rather centers on how the goal is to be defined, achieved and on the allocation of the costs of achieving the goal. That the debate has taken such a tone also adds credence to the argument that the

underlying problem is one of free riders and accordingly property rights definition. The previously noted increase in pasture acreage suggests that some merit in the observations made above respecting the abandonment of grain and oil seed production subsidies.

The presence of the politicized debate over the goal of protecting endangered species and the increase in pasture suggest testable hypothesis respecting the likelihood of compliance with prohibitive policy to protect endangered species such as the Bill. As was noted above attitudes related to the social and cash costs of conviction and the likelihood of conviction all go into the mix in making the decision whether or not to comply with a particular piece of legislation. Specifically, following Becker the higher the benefits of non-compliance, the lower the social and cash cost of non-compliance properly discounted by the probability of detection the less likely compliance. Thus if these attitudes can be ascertained for a group such as land use decision makers it becomes possible to arrive at a hypothesis respecting the likelihood of the groups compliance, this hypothesis can then be compared to the hypothesis of noncompliance inherent in the choice of the Act as a model for the Bill. These, of course, suggest hypotheses about these attitudes. Specifically, if the theory is correct and if the Act is a valid model for the Bill, the attitudes expressed should be a low perceived social cost accompanied by perceptions of relatively low probabilities of detection. It is also likely that individuals in the test group would view the proposed legislation as unfair, and would expect their neighbors to disregard it. The discussion of the discretion available to the Minister under the endangered species protection provisions of the Saskatchewan **Wildlife Act,**

contained in Chapter Seven, suggest that it is likely to be perceived as less intrusive than the Bill. This hypothesis can also be tested.

CHAPTER SIX

THE SURVEY

6.1 The Nature of the Questionnaire

The survey used a technique whereby the respondents were asked to select their preference from a list of options contained in the questionnaire as opposed to a revealed preference disclosure technique. While the literature clearly shows that a revealed preference questionnaire is less likely to be biased than the technique used, the nature of the information sought for this study made the use of revealed preference techniques impractical. A copy of the survey questionnaire is attached as appendix C.

Questions one through fifteen and twenty-six and twenty-seven are designed to acquire basic demographic and operation size data. Questions sixteen through twenty-three are meant to test the hypothesis that the abandonment of the **Western Grain Transportation Act** will lead to changes in the manner in which operations are structured that will ultimately lead to improved habitat. Questions twenty-eight to thirty-one and thirty-five to thirty-eight are used to elicit beliefs respecting the present existence of endangered species upon the landscape. Questions thirty-one and thirty-two, thirty-nine and forty, and forty-five through forty-eight are meant to test perceptions of social cost of unlawful behavior. Question thirty-four test attitudes respecting fairness.

Questions forty-one through forty-four inquire into perceptions of the probability of detection, as indirectly do questions forty-nine to fifty-one, which also query perceptions of governmental commitment to endangered species protection. Questions fifty-two through fifty-five examine the extent of a conservation ethic among participants, while questions fifty-six and fifty-seven ask participants to report their risk attitudes. Finally, questions fifty-eight through sixty-two are essentially contingent valuation questions meant to explore the respondents valuation of the opportunity cost of additional habitat.

The questionnaire was mailed to four hundred members of the Saskatchewan Stock Growers Association. The four hundred were chosen by draw without replacement from the membership list provided by the Association. Prior to the draw, the corporate, government and academic membership were removed, leaving a pool of seven hundred and eleven members, which were numbered from one through seven hundred and eleven. From the numbers the draw was held. A list of the numbers drawn is attached as appendix D. Of the 400 questionnaires mailed 90 responses were received, while the question within those 90 responses that had the lowest response rate, garnered 63 responses.

6.2 Survey Results

Of the 90 respondents, 87 claimed to be the operation's principal decision maker; while 83 reported to be male 3 respondents failed to respond to this question and four

reported being female. The vast majority of the respondents, some 80 people reported residing on their own operation. The distribution of the respondents by reported age is shown in table 6.1.

Table 6.1 The Distribution of Respondents by Age

	AGE GROUPS						
	>75	64-74	55-64	45-54	35-44	25-34	<25
# Respondents	5	15	14	28	22	5	2

Source: Survey

As is clear from table 6.1, there is a skewed distribution age wise of the respondents. This is consistent with other data that show an aging agricultural population in Saskatchewan. Thirty respondents indicated that they raise stock other than cattle. Sixty-two of the respondents reported doing some backgrounding, 29 reported some finishing, and 3 reported some milking, with all of them milking fewer than 20 cows. Respondents tended to be from larger operations, with 41 of the respondents reporting operations of two hundred or more breeding head. The distribution of respondents by reported size of breeding herd is shown in table 6.2.

Table 6.2 The Distribution of Respondents by Size of Breeding Herd

	# Breeding head						
	<20	20-49	50-99	100-149	150-199	200-250	>250
# Respondents	4	6	16	15	9	17	24

Source: Survey

Twenty-four respondents use PFRA community pastures. Government of Saskatchewan community pastures use was reported by 18 of the respondents.

Respondents were asked to use a 1 to 5 scale, where 1 was strongly disagree, 3 was indifference and 5 was strongly agree, to express their level of agreement to statements respecting the presence of endangered species, the fairness of expecting land owners to bear the cost of protecting endangered species, the likelihood of the Bill, if passed, to affect their land. They were asked to use the same scale to address statements respecting perceptions of social cost of noncompliance, about their beliefs respecting how concerned government actually is, how they perceived the probability of conviction, the likelihood of their neighbors complying and about how they think about the presence of endangered species[6].

The respondents weakly denied the presence of endangered species on land owned or rented by their operation, responding with a mean assessment of 2.8, however the T-statistic, for the hypothesis that this mean was significantly different from 3, was 1.21. Similarly the mean response of 3.2 to the statement averring the possible presence of endangered species on land owned or rented by the respondents' neighbor was not statistically significantly different from 3 given its T statistic of 1.36. The statement "I feel that it is manifestly unfair to expect landowners to bear the cost of protecting endangered species" had a mean of 4.3 and was strongly significant with a T statistic in excess of 100. With both means equal 4.3 and T statistics in excess of 100 the statements suggesting that if passed the Bill will affect the respondents or the respondents neighbors land was also strongly significant.

[6] The T statistics reported throughout the remainder of this section test the null hypothesis that the mean associated with the T statistic is equal to three. Rejection of this hypothesis means that the means are

The statements respecting perceived social costs were intermixed throughout the questionnaire, and all were structured such that indifference (3), agreement (4), or strong agreement (5) is indicative of a perception of respectively lower social costs associated with noncompliance with the Bill, should it become law. For example a mean response indicating indifference to or agreement with the statement: "I would invite a convicted poacher to my or my child's wedding" is taken to indicate that in general society does not hold the illegal killing of animals in contempt, and thus will not shun a poacher or impose any other significant social costs on a poacher. Incidentally this statement was the only one of the social cost question that had a mean less than 3. However, with a T statistic of 1.16 the hypothesis that the mean of 2.8 is different than 3 cannot be rejected neither can the hypothesis that the 3.0 mean accompanying the statement " I would accept an invitation to the wedding of a convicted poacher" is different from 3 be rejected, as the T statistic associated with the hypothesis was 0.15. The avowal, that if the respondents' neighbors feel it to be in their best interest not to obey the Bill that the neighbors will not comply, had a statistically significant mean of 3.9. The T statistic was in excess of 100. When asked to aver that they would socialize with a neighbor convicted of breaching the Bill should it become law the mean response was 4. This response again had a T statistic in excess of 100 and is therefore strongly significant. When asked to avow a preference between socializing with a neighbor convicted of breaching the Bill or a urban relative, a rural relative not a member of the respondent's district and a rural relative resident in the respondents district, who objects to the presence of the felon the means were 3.4, 3.5 and

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statistically significantly different from three.

3.4 respectively, all of which were statistically significantly different from 3 at a 95% confidence level. The T statistics being 2.70, 3.17, and 2.26 respectively. Similar responses were received when the same questions were asked respecting the Saskatchewan **Wildlife Act** and its endangered species protection provisions.

The respondents on average express some statistically significant distrust of government commitment to the preservation of endangered species. When asked whether they disbelieved that either the Government of Canada or the Government of Saskatchewan was particularly interested in the preservation of endangered species or if either level of government was prepared to commit anything beyond minimal resources to endangered species preservation the respondents responses returned means of 3.3 and 3.4 with T statistics of 2.00 and 2.73 respectively. The respondents did, however, exhibit a fairly strong conservation stance. When asked if they liked to watch wildlife on their land the mean was 4.2 with a T statistic in excess of 100. When asked about liking to watch wildlife on their neighbors land the T statistic was again in excess of 100, while the mean was 4.1. They also gave significantly greater than 3 responses on average when asked if they wanted to see more wildlife if they did not have to pay for it. This query had a mean of 3.7 and a T statistic of 4.69. However, they expressed on average indifference to seeing more wildlife when it was not qualified by the ability to escape the associated costs. The mean response being 3.1, with an accompanying T statistic of 0.50.

The respondents tended to exhibit a belief that the probability of detection was quite high. The average response to the statement that there was a one in a thousand chance of conviction was not significantly different from three at the ninety percent level. The mean response being 3.3, with a T statistic of 1.44. The same is true to the responses for a chance of conviction of greater than one in a thousand, with a mean of 3.2 and T statistic of 0.89. The statistically significantly different from three responses were for one in five chance of conviction with a mean of 3.4 (T statistic of 2.73) and one in a hundred with a mean of 3.3 (T statistic of 1.97). These results seem contrary to the respondents claimed distrust respecting the seriousness of government's commitment to endangered species protection and may be the result of lack of experience on the part of the respondents with enforcement branches of government. The anecdotal evidence from the United States suggests that enforcement is a problem and that the probability of successful detection is quite low. Given Canada's larger land mass and markedly smaller population than the United States it seems unlikely that the probability of conviction will be higher here than it is in the United States.

6.3 Regression Results

The representativeness of these attitudinal results was tested by regressing, using ordinary least squares and White's correction for heteroskedasticity, each of the vectors of responses to the attitudinal questions as a dependent variable against a matrix of demographic independent variables. The demographic variables were age, sex,

residence, size of breeding herd, amount of pasture owned and rented and the amount of cropland owned and rented. Fits were poor, which is to be expected if demographics has little to do with the attitudes. The R squareds, the percentage of the variation in the dependent variable explained by the independent variables, for the regressions ranged from a low of 0.04 to a high 0.18.

As well as heteroskedasticity the data exhibited symptoms of multicolinearity. Principally, the dropping of an observation led to changes in the estimated coefficients of up to 50%. Combining the rented and owned pasture variables and rented and owned cropland variables into two single variables cropland and pasture eliminated some of this change. Eliminating any variables with T statistics of less than one essentially stabilized the coefficients of any statistically significant variables. This led to nine equations with statistically significant independent variables at a 90% or greater level of confidence.

The dependent variables for the regressions with statistically significant independent variables included invite and attend, which is the vector of responses to the query respecting inviting a poacher to a wedding or attending a poacher's wedding respectively. The variable fair, which is the vector of responses to the question respecting the belief in the fairness of expecting landowners to pay for protecting endangered species also had statistically significant independent variables. The equations for the dependent variables named felon over family member of your district and felon over rural family member, which are the responses to the questions that aver a preference

to socializing with a neighbor convicted of breaching the Bill or the **Saskatchewan Wildlife Act** over a family member who lives in a rural area or a family member who lives in the same rural area as the respondent who refuses to socialize with the neighbor purely because of the conviction had statistically significant independent variables. As did the variable government cares, which is the vector of the responses to the assertion: "I do not believe that either the Government of Canada or the Government of Saskatchewan is particularly committed to the protection of endangered species". The same is true for the variables labeled E1IN5, E1IN1000 and GR1IN1000, which are the responses to the avowal that the probability of detection is one in five, one in one thousand or greater than one in one thousand respectively. The independent variables were: c, the intercept; age, the age of the respondents; sex, the gender of the respondents; res, how large a population center that the residence of the respondents is located in; herd, the size of the respondents breeding herd; crp, the amount of crop land that the respondents' operations own and rent; and pas, the amount of pasture that the respondents' operations own and rent. The F-statistic is the statistic to test the joint hypothesis that the coefficients of the independent variables a statistically significantly different from zero. While the column headed t-statistic is the statistic to test the hypothesis that the coefficient of each of the independent variables is statistically significantly different from zero. The results for the least squares (LS) regression on dependent variables invite and attend are reported in table 6.3 and 6.4 respectively, the remaining six regressions are reported in appendix E.

Table 6.3 Regression Results With Invite as the Dependent Variable

LS // Dependent Variable is INVITE

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.280668	0.543646	4.195131	0.0001
RES	-0.3075	0.129881	-2.36753	0.0205
HERD	0.100286	0.083391	1.202608	0.2329
CRP	0.047024	0.043879	1.071687	0.2873
PAS	0.032514	0.028088	1.15757	0.2507
R-squared	0.118724	F-statistic		2.559658
Sample Size: 82		Source: Survey		

Table 6.4 Regression Results With Attend as the Dependent Variable

LS // Dependent Variable is ATTEND

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.422664	0.511125	4.739871	0
RES	-0.37729	0.096297	-3.91802	0.0002
CRP	0.036888	0.043935	0.8396	0.4038
PAS	0.036778	0.028324	1.298486	0.198
HERD	0.120875	0.083166	1.453419	0.1502
R-squared	0.15735	F-statistic		3.547907
Sample Size: 82		Source: Survey		

The signs of the significant variables suggest that the larger the community you live in the less likely you are to invite a poacher to a wedding or to attend a poachers wedding. That the larger your breeding herd or the more pasture you own and rent the more likely you are to attend a poacher's wedding and the less likely you are to believe that the probability of conviction is one in five. That the older you are the more likely you are to believe that it is not manifestly unfair to expect landowners to bear additional costs for habitat protection. That females are more likely than males to prefer to socialize

with family members than neighbors who have been convicted of violating the Bill, if the family member objects to the neighbor. That the larger your breeding herd the more likely you are to believe the government is serious about endangered species protection. The larger the community in which you live the less likely you are to think that the probability of detection is one in five and the more likely you are to believe that it is one in a thousand or greater.

6.4 Implications of the Survey and Regression Results

The low R squareds of the regressions and the small number of statistically significant coefficients suggest that the attitudes found in the survey are fairly generally held across the respondents. Given the mean responses to the attitudinal questions it seems that the social costs of breaching the Bill, had it become law, were not sufficiently high to guarantee that a rational economic agent, who personally gains little or no utility from the presence of endangered species, will comply. As the penalty structure under the Bill is similar to that under the Act, and as has been argued above there is little reason to expect any greater rates of conviction in Canada than in the United States it seems clear that the compliance problems associated with the Act could have been expected in Canada had the Bill become law.

If the Bill can be expected to suffer from compliance problems similar to those that afflict the Act, this, of course, suggests that the Bill by itself would not have proved

particularly successful at addressing endangered species protection problems in the heavily human inhabited regions of Canada. If, as this work suggests, there is good reason to believe that the prohibitive policy framework inherent in the Bill is not likely to prove successful in addressing the endangered species problem the obvious question becomes what will address the problem.

If the endangered species problem is underscored by a free rider driven under investment in habitat as has been argued above then the use of a stick that can be avoided by means fair or foul cannot be expected to cure the problem. As this work suggests that the Bill, had it become law, would likely have been avoided by unlawful means one of the corollaries that must arise is that successfully solving the endangered species problem is going to require some form of augmentation of the Bill.

The need for augmentation suggests that to prove successful the Bill would have had to have been joined to policies that either inflict unavoidable costs on activities that exacerbate the endangered species problem or that allow decision makers to capture some of the public good benefits associated with investment in habitat. Colloquially, if your are going to use a stick make sure the decision maker cannot avoid it and if you cannot find an unavoidable stick use a carrot. Ultimately if Canada is going to successfully resolve its endangered species problem such measures aimed at making the stick unavoidable or measures that dangle carrots may prove a key component in the successful policy package.

CHAPTER SEVEN

IMPLEMENTED POLICIES THAT MAY AFFECT ENDANGERED SPECIES HABITAT

7.1 Of Carrots and Sticks

If the Act is a valid model for the Bill, and if the Act is the expensive and ineffective piece of legislation that it is represented as, then is there anything policy makers can do to avoid the problems associated with the Act? In neoclassical economic theory, the principal reason to regulate is, of course, market failure. In the case of endangered species, that would be an attempt to deal with the free rider problem. This seems to suggest that policy that is going to deal effectively with free riding is going to accomplish one of two things. It will either render the agents to be free ridden upon incapable of resisting the free riders or it will render it impossible or at least more difficult for agents to free ride. That is, the policy can employ a carrot or a small stick, as opposed to the big stick of prohibitive policy.

Those policies which render the agents to be free ridden upon incapable of resisting the free riders, small sticks, basically remove benefits from or impose costs on agents who act as perfect competitors. That is, the state removes benefits from or imposes costs upon agents who lack market power and thus have no means of passing

them on, and if properly structured have no means legal or illegal of avoiding them. The agents are then forced by the market to make land use decisions, in theory, based upon the highest use value of the land. This aids habitat in the agricultural region of Saskatchewan by moving marginal crop land out of grains and oil seed production into the production of forage or use as pasture, both of which are presumably better habitat than fence row to fence row cultivation.

7.2 Policies that Impose Costs or Remove Benefits

As far as the removal of benefits goes, we have seen some of that already occurring in the agricultural region of Saskatchewan. For various reasons, all of which are beyond the scope of this examination, both the Federal Government and the Saskatchewan Provincial Government have largely abandoned subsidizing agricultural production generally and grain and oilseed production specifically. This has had the corollary, although probably anticipated, effect of lowering the expected return from grain and oilseed production relative to other uses for less fertile land. The abandonment of the Gross Revenue Insurance Plan and the Crow Benefit for grain transportation have had the effect of rendering grain and oilseed production, particularly production of grain and oilseeds for export, on marginal land uneconomic. The abandonment of GRIP lowered revenues and the abandonment of the Crow Benefit raised costs, both of which lower net returns to cropland. One of the most likely results of these changes, over time, will be an increase in pastureland. This will provide better habitat than grain and oilseed

production does. The full effects of these changes should be expected to occur over a number of years, although improved pasture acreage has increased in Saskatchewan from 2,658,002 acres in 1991 to 3,047,567 acres in 1996 (Saskatchewan Agriculture and Food **Agricultural Statistics 1996**). Thus, the abandonment of subsidies tied to grain and oilseed production has the effect of altering the highest use value for marginal land away from grain and oilseed production toward better habitat.

The survey tested the hypothesis that the abandonment of the WGTA transportation subsidy moved land use away from cropping into better habitat forms. Forty-nine respondents reported changing their operations composition in the last five years. There were twenty reports of change in the size of the cattle herd because of the elimination of the WGTA transportation subsidy; with nineteen reports of increased herd size. Seventeen reports of changes in owned pasture with sixteen increases, six changes in pasture rental with five respondents reporting increases. Eighteen respondents reported changes in owned forage as a result of the repeal of the subsidy with sixteen of the reports being increases. Two respondents reported changes in leased forage, both of which were increases. Fifteen respondents changed their owned cropland as a result of the repeal, twelve of them decreasing their holdings. All three of the respondents who claimed changes in leased cropland as a result of the repeal of the WGTA transportation subsidy claimed decreases. The response to whether or not the operation had changed in the last five years was regressed as the dependent variable against the same demographic data that was regressed against the attitudinal data reported above. The statistically

significant results are reported in table 7.1. These results suggest that the older you are the less likely you were to have made any changes and the more cropland you have the more likely you were to change.

Table 7.1 Regression Results for Change in Operation in the Last Five Years as the Dependent Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.862622	0.159673	5.402426	0
AGE	-0.11377	0.030846	-3.68815	0.0004
CRP	0.037769	0.015734	2.400483	0.0186
R-squared	0.169526	F-statistic		8.675572
Sample Size: 88		Source: Survey		

In a similar vein the move to limit moral hazard under the crop insurance program should, at least in theory, move marginal land out of the production of grains and oilseeds and into something friendlier as wildlife habitat. Moral hazard is the action on the part of an insured that alters the risk the insurer faces after the contract is entered into, for example speeding in an automobile, or sowing land that you would not have sown but for the policy. Insuring on the basis of an individual producer's average yields rather than area average yields should lower the incentive to seed marginal land. If your only going to be covered for what you have historically actually grown rather than on the basis of what has actually been grown in the area, your incentive to seed marginal land should decline, thus increasing the amount of land for which the highest use value is not grain or oilseed production. Before drawing any real conclusions respecting crop insurance two things bear notice. First, the idea that individual averages will dissuade moral hazard requires that decision makers once they move marginal cropland to another use leave it in that use. Given the improvements in agricultural chemicals it is distinctly possible that

should crop insurance offer contracts with guaranteed output prices sufficiently above expected market prices decision makers may have an incentive to spray, break and seed the marginal land. The extent to which this will pose a problem depends entirely on how accurately expected prices are reflected in the crop insurance contracts. That is, the closer the Saskatchewan-Canada Crop Insurance Corporation can come to actual expected prices when writing their policies the less likely moral hazard is to arise and the less distortionary crop insurance will be. Second, crop insurance with its subsidized premiums remains a subsidy that has the ability to make using land for cropping appear economic to an individual decision-maker, when but for the subsidy it would not be. However, given the attempts to limit moral hazard in the system, crop insurance is probably not now as distortionary as it was.

In as far as railroads and agricultural input suppliers can and do utilize market power they can effect land use decisions. If through noncompetitive behavior these organizations can extract rents from farmers, farmers will move marginal land from cereal and oilseed production into pasture or some other form of better habitat than cropped land. By raising the costs that farmers face above that of the competitive equilibrium, farmers who face a fixed world price for their output will lower their production to reflect their higher marginal costs. This will drive land out of crop production and into some other use, either pasture or idleness, both presumably superior habitats than crop production. While allowing these uses of market power to exist has a positive effect on levels of habitat the costs of this habitat are being borne by farmers.

Farmers can also be forced to bear the costs of improved habitat through the elimination of water subsidies for irrigation. While this is of little practical importance in Saskatchewan where irrigation is essentially insignificant, there are areas throughout the world where, but for irrigation, land would not be cropped, and if the water was not subsidized the land would not be irrigated. Anderson and Leal make this point repeatedly with regard to substantial areas of the Western United States (Anderson and Leal (1991)).

7.3 Policies that Grant Benefits

As well as the small sticks, we have also seen recent examples of carrots being used to improve habitat. Saskatchewan has established conservation easement under the **Conservation Easement Act** (R.S.S. 1978 c. 27.01). The basic concept is extremely simple. You as a landowner grant an easement over some portion of your land that has some particular conservation characteristic, that is something that forms good species habitat, to a qualifying agency, some organization like Ducks Unlimited Canada, or the Nature Conservancy of Canada. You get a tax break; the agency gets to file an easement against your certificate of title at the appropriate land titles office. Once the easement is filed the land, which you retain title to, can only be dealt with subject to the easement. That is to say that the land stays in its habitat form until such time as the agency agrees otherwise. While the presence of the easement may affect the salability of the land, lower its sale price to a third party, the tax break you receive plus any utility you receive

from the presence of the habitat plus any financial benefits you receive from the conservation agency should in theory compensate you for any decrease in price. It bears notice that not all the easements that you might enter into need cause a decrease in the value of the property. For example you might fence off a stream through a pasture and grant the easement on the stream, it is conceivable that a purchaser might pay the same price for such a pasture as he would of without the easement. You will of course, however, have to pay the capital and maintenance costs for the fence. These cost; particularly the capital costs may however be offset by an organization such as Ducks Unlimited Canada.

The Government of Saskatchewan is also a participant in the North American Waterfowl Management Plan. The plan is largely administered, in Saskatchewan, by Ducks Unlimited Canada (DUC). Under the plan DUC has established various programs ranging from the outright purchase of land through long term leases and funding farmer/rancher capital expenditures in exchange for easements and contractual undertakings for things like delayed forage harvest and rotational grazing, to establish marshes and prairie upland habitat for waterfowl nesting. As a corollary benefit the same prairie upland habitat that is suitable waterfowl nesting is suitable for other upland species. While the Gray, Rosaasen, Taylor, Burden and Stefanson study suggests that the plan has overall been reasonably successful (Gray, Rosaasen, Taylor, Burden and Stefanson (1992)) it is not without some potential problems. Contracts whether for lease or for sale must be negotiated separately. This will have the effect of increasing

transaction costs. The potential for hold up problems also exists. Should a project require dealing with several land owners, each owning key pieces of property with specific physical attributes once one agreement is reached and the money invested the other land owners can be expected to raise their prices to extract additional rents. The purchaser being aware of this phenomenon may elect not to enter into negotiations at all rather than find he or she held up after the expenditure of the time and money necessary to enter negotiations. Finally, the limitation on land ownership found in the **Saskatchewan Farm Security Act** (R.S.S. 1978 c. S-17.1), and the constraints on subdividing a quarter section of land in the **Planning and Development Act** (R.S.S 1978 c. P-13.1.) impose administrative and other transaction costs that may result in land being leased that should be purchased.

Supply management in that it restricts the amount of a commodity that can be sold has a corollary effect of limiting the amount of the commodity produced from that which the free market would produce. Consequently, the quantity of inputs used in the production of the commodity is also limited from the free market equilibrium. In so far as cereal grains are used as feeds in the production of supply managed commodities, the retention of supply management will limit the demand for local use of cereal production, and should therefore limit the demand for land to produce cereals. This should then prompt marginal land out of cereal production and into pasture or other better forms of habitat. It is trite economics to observe that it is the consumers of these supply managed commodities that bear the cost of the system. This would suggest that if the state's sole

policy goal is a desire to increase habitat while forcing the cost on to as broad a segment of society as possible that supply management in all areas of agricultural goods production could prove effective. This ignores the very real problems of effective border controls, the inevitable ire of our trading partners, particularly if the quotas are set to leave Canada as a net exporter of cereals and oil seeds, and such a schemes highly questionable legality under the General Agreement on Tariffs and Trade.

If you can sell the hunts of plentiful species that share habitat with endangered species you will provide habitat on land to that level where the marginal cost of the land as habitat, including the opportunity cost of not farming the land equals the price you can charge for the hunts. Thus habitat should be created. Anderson and Leal point to several African examples where this was done through charging for access to hunt species that are not endangered (Anderson and Leal (1977)). Private land holdings in Saskatchewan tend to be too small to allow a single individual to successfully attempt charged access. This could be overcome with the use of a co-operative similar to the model used in Africa reported by Anderson and Leal. In this sort of venture it would appear to be the individual who values the habitat highest who is meeting the cost of expanding habitat. It bears notice that for such a scheme to be viable that you require people who are prepared to pay to hunt. A 1994 survey by Gray, Conacher and McNinch suggests that such a market exists (Gray, Conacher and McNinch (1994)).

If you desire people to do something, there remains the tried and true method of paying them to do so. If you want land to remain idle there is always the example of the United States Department of Agriculture's (USDA) Conservation Reserve program. Essentially, the American government enters into contracts with farmers where they agree to pay them a set fee for the length of the contract, ten years, to let the land sit and allow natural habitat to grow up. The Americans have also had some success with tying the receiving of agricultural subsidies with environmentally friendly activities, for example the draining of wetlands can bar an American farmer from access to the subsidy programs administered by USDA. In these sorts of programs it is the taxpayers that bear the costs of improved habitat. In the northern grain growing region of Saskatchewan, the transition zone from the short grass prairie to the boreal forest, tax concessions to tree farms could generate publicly funded habitat improvement.

7.4 The Saskatchewan Endangered Species Protection Legislation

The Province of Saskatchewan has also recently legislated in this area, passing what has the potential to become fairly big stick. Two pieces of legislation have passed Saskatchewan's legislature and received royal assent. **The Wildlife Act, 1997** (R.S.S. 1978 c. W-13.11) and **The Wildlife Act, 1998** (R.S.S. 1978 c. W-13.12) which while it received Royal Assent remains unproclaimed (collectively hereinafter referred to as The Sask. Act as the statutes are identical in their treatment of endangered species). The Sask. Act like the Bill and the Act uses a listing procedure. The Sask. Act does not however immediately confer protection on the listed species' habitat, but rather arrives at

habitat protection through section 50, which allows for the formation of recovery plans. Subsection 50(5), which sets out the factors that the minister, may consider in a recovery plan reads:

> 50(5) the factors that the minister may take into consideration when determining the priority to be assigned to a recovery plan or any portion of a recovery plan include:
>
> (a) whether scientific evidence indicates that the wild species at risk mentioned in the recovery plan is naturally becoming extirpated;
>
> (b) whether it is technically or economically feasible to recover the wild species at risk; and
>
> (c) the status of the wild species at risk elsewhere.

Thus, the Sask. Act has the potential to avoid some of the worst problems perceived to plague the Act and would have potentially plagued the Bill. While the Sask. Act has apparently never been litigated the language of the sections suggest the following. Under the Sask. Act if a species is doomed, its mere listing will not be sufficient to require that costs be born to attempt the impossible. If a species is at risk of extirpation in Saskatchewan, but is thriving elsewhere, the Sask. Act does not mandate that costs necessarily be born to protect the species in Saskatchewan. Thus, if private landowners are to face an externality for the protection of listed species under the Sask. Act it is relatively clear that the instances of such an externality occurring should be rarer under the Sask. Act then under the Act or the Bill, and should be related to species with generally better chances of recovery than can be expected under either the Act or the Bill. The Sask. Act, in section 52, also has an exception to the protection granted a listed species which allows the director to license the removal, death, capture or destruction of an endangered species if it is necessary to do so to protect human health or to prevent

property loss. If Mann and Plumber are correct that it is impossible to save all species, then the course taken in the Sask. Act may well be wiser than that adopted by the Bill or the Act.

It bears notice that had the Bill be reintroduced and passed, and should an actual conflict have arisen between the operation of the Bill and the Sask. Act that under the paramouncy doctrine the federal law would have prevailed. That is to say, that if the federal government acting constitutionally under the criminal law power and the provincial government acting constitutionally under their property and civil rights powers enact legislation which is contradictory, by the doctrine of paramouncy the federal legislation rules. Given the wording of the two statutes the only actual conflict that seems possible to arise is a listing of a species under the Bill when that species is not listed under the Sask. Act, or vice versa. Should such an event occur the species would be listed and entitled to the protection of the legislation under which it is listed. Conflict also appears to be possible if a species is listed under both pieces of legislation. If the Saskatchewan Minister in his or her discretion decides to do nothing it will still be possible for federal authorities to act to protect habitat, even on private or provincial Crown land, to the extent that the word residence is interpreted to allow them. Whether these constitute conflict within the meaning of Canadian constitutional jurisprudence, or the mere exercise of concurrent jurisdiction is beyond the scope of this work. The reader is however reminded that litigation to resolve such questions in the area is possible, although potentially not likely.

7.5 Subsequent Federal Legislative Initiatives

When the Bill died on the order paper with the calling of the 1997 Canadian Federal General Election, the Government of Canada undertook a consultation process, seeking input on endangered species protection from a wide variety of stake holder groups, that ultimately ended with the introduction of **The Species at Risk Act** (Bill C-33, Second Session, Thirty-sixth Parliament, 48-49 Elizabeth II, 1999-2000)(hereinafter Bill C-33), Bill C-33 ultimately died on the order paper with the calling of the 2000 Canadian Federal Election, and was subsequently reintroduced, with some minor amendments, on February 2, 2001 as **The Species at Risk Act** (Bill C-5 of the First Session of the Thirty-seventh Parliament 49 Elizabeth II, 2001)(hereinafter Bill C-5). Bill C-5 passed second reading and was referred to the House of Commons Standing Committee on Environment and Sustainable Development on March 20, 2001, who reported it back to the House of Commons with amendments on December 3, 2001. During this process there appeared to arise an informal coalition of various industries involved in the extraction of both renewable and nonrenewable natural resources, whose participants held interests in real property. These property interests scored a victory in the transition from Bill C-65 to Bill C-5. The victory comes in the manner that endangered species protection could have affected property owners under the Bill compared to the regulation property owners will face should Bill C-5 be enacted.

The summary of Bill C-5 as reprinted by the Standing Committee on Environment and Sustainable Development reads:

> The purposes of this enactment are to prevent Canadian indigenous species, subspecies and distinct populations of wildlife from becoming extirpated or extinct, to provide for the recovery of endangered or threatened species, to encourage the management of other species to prevent them from becoming at risk.
>
> This enactment establishes the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as an independent body of experts responsible for assessing and identifying species at risk. It provides that COSEWIC's assessments are to be reported to the Minister of the Environment and to the Canadian Endangered Species Conservation Council and it authorizes the Governor in Council to establish by regulation the official list of species at risk based on that process. It requires that the best available knowledge be used to define long- and short-term objectives in a recovery strategy for endangered and threatened species and it provides for action plans to identify specific actions.
>
> It creates prohibitions to protect listed threatened and endangered species and their critical habitat.
>
> It recognizes that compensation may be needed to ensure fairness following the imposition of the critical habitat prohibitions.
>
> It creates a public registry to assist in making documents under the Act more accessible to the public.
>
> It is consistent with Aboriginal and treaty rights and respects the authority of other federal ministers and provincial governments.

The claim that the property lobby was victorious relies on the four principal changes from Bill C-65 common to both Bills C-5 and C-33. There is a notable change in tone, from Bill C-65 to Bills C-5 and C-33. There is a clarification of when and how private property will be affected in both Bills C-5 and C-33 when compared to Bill C-65. Both the latter Bills also expressly contemplate compensation for affected landowners,

which Bill C-65 does not. Finally neither Bill C-33 nor Bill C-5 contain the public interest standing provisions found in Bill C-65.

The absence of public interest standing rules removes a huge property lobby concern with Bill C-65. Property holders do not have to worry about facing nuisance lawsuits being brought through statutory standing provisions. If the Ministry of the Environment is not doing its job under the newer Bills, it is the Ministry that will have to worry about the lawsuits, not the individual property holders. This renders the expected costs faced by property owners due to endangered species legislation lower under Bills C-5 and C-33 than they would have been under Bill C-65.

Like Bill C-33 before it, Bill C-5 requires consultations with landowners and all other interested parties through the recovery planning process. This is not a marked departure from Bill C-65, section 39 of Bill C-65 requires that the Minister in the recovery planning process consult with any wildlife management board established under an aboriginal land claim or any other persons that the Minister considers directly affected by or interested in the recovery plan. This change is essentially one of tone. Consultation under Bills C-5 and C-33 is mandatory and the requirement is often repeated. When reading these latter two Bills the reader is left with the impression that there is very little, particularly in the recovery process, that the Government can do without extensive consultation with anyone who may be affected. Bill C-65, while hardly exclusionary, lacks the focus on consultation found in the subsequent Bills.

Environics in a poll of rural residents, done in 2000, noted: "Moreover although the research reveal that there may be some barriers to overcome, policy makers and communicators will be rewarded in their efforts to increase stewardship practices among Canadian landowners, as long as appropriate initiatives are launched and as long as trusted channels of communication are employed."(Environics (2000): 36) Thus, the additional emphasis that Bills C-33 and C-5 places on consultation over Bill C-65 should be expected to aid in the building of trust. Furthermore, if a level of trust can be established, the consultation process, over a long enough period of time, may be able to take on an educational component that may result in a change in the utility functions of land owners. These changing perceptions could move their private perceptions of the returns from habitat closer to the perceptions required for a societal optimal. That is, landowners may at some time be prepared to accept more free riding because of the increased value they place upon habitat.

Both Bills C-5 and C-33 at first blush appear to broaden the ability of the Government of Canada to regulate private property use compared to Bill C-65. This appearance is largely illusionary. Both the latter Bills allow for the regulation of private property once it has been designated as critical habitat. Both Bills also add to the definition of residence, while retaining Bill C-65's prohibition on damaging the residence of a cross boundary endangered species. Bill C-33's definition of residence is:

> ``residence" means a specific dwelling-place, such as a den, nest or other similar area, place or structure, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing or hibernating.

While Bill C-5's definition of residence follows:

> ``residence" means a dwelling-place, such as a den, nest or other similar area or a place that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating.

As was noted above the cross boundary species mostly live in Southern Canada where most of the private land in the country is located, thus the expansion of the definition of habitat and the allowance of regulation of critical habitat really only clarify the situation as to where and when private property can be regulated. All that these changes seem to really do if to specify with greater clarity the size of front and back yard that come with the residence, and thus allow for greater certainty as to what landowners can expect. Under the definition of residence in Bill C-65, as was argued earlier, there existed a substantial potential for litigation about the size of a yard that came with a residence. Under the latter two Bills once the species is listed, not only does its residence gain protection but recovery planning becomes mandated. During the recovery planning process the latter Bills mandate the identification and designation of any habitat critical to the species recovery. Thus, if no habitat is designated only the hole in the ground or the nest in the tree is protected, with no yard what so ever. If the species required any beyond the hole or the nest by the latter Bills it would have to be designated as critical habitat, and subject to regulation and compensation associated with same.

Bill C-5, like Bill C-33 before it and unlike BILL C-65 expressly contemplates the payment of compensation for those adversely affected by the designation of their

property as critical habitat under the recovery planning process. Section 63 of Bill C-5 reads:

> **63.** (1) The Minister may, in accordance with the regulations, provide fair and reasonable compensation to any person for losses suffered as a result of any extraordinary impact of the application of
> (*a*) section 58, 60 or 61; or
> (*b*) an emergency order in respect of habitat identified in the emergency order that is necessary for the survival or recovery of a wildlife species.
>
> (2) The Governor in Council shall make regulations that the Governor in Council considers necessary for carrying out the purposes and provisions of subsection (1), including regulations prescribing
> *(a)* the procedures to be followed in claiming compensation;
> *(b)* the methods to be used in determining the eligibility of a person for compensation, the amount of loss suffered by a person and the amount of compensation in respect of any loss; and
> (*c*) the terms and conditions for the provision of compensation.

Section 58 allows the Minster of the Environment to make regulations affecting critical habitat as identified in a recovery strategy and specifically allows such regulations to be binding on private property anywhere in the country following consultation for the purpose of negotiating an agreement for the use of the property (s. 58(4)). Section 60 prohibits the destruction of critical habitat that is in a province or territory but not on federal lands. Section 60 allows the Government of Canada to enter into agreements to purchase land for the protection of critical habitat. The question of interest surely must be will rational landowners view this section as being sufficient to protect them from any adverse effect of the presence of an endangered species that they would otherwise be unprepared to accept? That is, will it allow them to gain some of the benefits received by the general public who would otherwise be free riders on the forced habitat investment?

The short answer is maybe. Compensation is in the Minister's discretion. The Minister's discretion is subject to the regulations. Section 63(2)(b) obliges the Governor in Council to make regulations determining who is eligible for compensation, how to calculate the amount of the loss and how to compensate the loss. Thus, who will be able to receive what in compensation is going to depend upon the wording in the regulations. What are property holders going to want to see in the regulations?

Property interests are almost surely going to argue that an "extraordinary impact" is any sort of disruption to their present or planned uses of the property. They will also almost surely argue that to be "fair and reasonable" the level of compensation is going to have to be, at the minimum, the difference between the value of the property under its actual or planned use prior to the designation as critical habitat and its value under the uses allowable under the regulation that follows the designation. That is, in economic terms, property interests will want compensation for any change in use that leaves them at the very least indifferent between the prior and subsequent uses. As free riders would like the landowners to bear all of the costs, if the regulations were to establish a level of compensation that left the landowners indifferent it can be argued that the regulations would achieve an efficient allocation of critical habitat.

Will the property interests be able to achieve regulations that suggest an efficient allocation of critical habitat? Given the success they have had to this point in time it

seems decidedly possible.[7]

[7] As an aside it may bear notice that it is received economic theory that the initial endowment of rights is going to have an effect on the final outcome of a bargain. Thus, the apparent victory of property rights over the broader right to a clean environment would seem to suggest that our society remains as wedded to property as ever, and that in the last fifty or so years we have not moved particularly far toward Leopold's land ethic.

CHAPTER EIGHT

COSTS OF PRESERVING HABITAT

8.1 How Much Habitat Is There?

The Bruntland Commission in **Our Common Future** (World Commission on Environment and Development (1987)) calls for 12% of all land, both public and private, to be conserved. In the agricultural region of Saskatchewan that would constitute approximately eight million acres being 12% of the just over 65.65 million acres reported by Statistics Canada from the 1996 Census of Agriculture.

From the 1996 Census of Agriculture 71% of Saskatchewan farmland was cropland or summerfallow (author's calculation from census data). This is 5% greater than the 66% of farmland that falls into these two categories for the Canadian prairies overall reported by Neave, Neave, Weins and Riche (2000). Tame or seeded pasture represents 5% of farmland in the prairies generally (Neave, Neave, Weins and Riche (2000)) which is the same percentage as occurred in Saskatchewan (author's calculation from census data). In the prairies overall this suggests that 71% of the agricultural region is of poorer quality habitat, while in Saskatchewan poorer quality habitat makes up 76% of farmland. Neave, Neave, Weins and Riche report that 93% of the prairie ecozone is agricultural land (2000). They also report estimates that all that remains of original

native vegetation is 1% of the tall grass prairie, 19% of the mixed grass prairie, and 16% of aspen parkland.

These estimates do not seem inconsistent with those supplied by Conrad Olson, of Saskatchewan Environment and Resource Management (SERM), who suggests that between six and seven million acres of some form habitat better than crop land exist in the agricultural region of the Saskatchewan. This imprecision has two sources. First, there is no general agreement as to exactly what constitutes habitat. Second, these lands are often divided between different programs such as the representative areas network, the conservation easement program, Ducks Unlimited Canada lands or Saskatchewan Provincial Parks for example. This Mr. Olson explains makes it difficult to determine exact acreage as land can be and in fact is counted under different programs at the same time. He further added that about one-fifth of these lands remain in a natural (pre European contact state) while the remainder has in some sense been changed from its pre-contact state. Essentially this suggests that in order for the Province of Saskatchewan to attain the 12% suggested by Bruntland in the agricultural region of the province that an additional one to two million acres will be needed (Olson, telephone conversation of July 7, 1999). The costs of converting and/or preserving this land are going to have to be born by someone. For example should the Bill be successful, unlike as has been argued above, the costs will largely be born by landowners. Should government elect to purchase or lease any necessary private land while converting crown land the cost can be largely

expected to be born by taxpayers. Should the task fall to private groups like Ducks Unlimited Canada the costs will fall on the groups' members.

8.2 Some Problems Associated with Valuing Habitat

Given the public good nature of habitat, caused by the apparent technical limits on excluding anyone from its entropy limiting benefits, valuing habitat becomes difficult. It is trite economics that when a resource is optimally used the benefit of its use at the margin equals the cost of its use. In a perfectly competitive market, such as the market for land in the agricultural region of Saskatchewan appears, it is easily shown that at the optimum the use to which a resource is put must generate benefits at the margin equal to or greater than the opportunity cost associated with the next best use. To convert land from agricultural use to habitat, the next best use would appear to be agricultural, and thus if the land is to be converted to habitat it must return at least what it would in its agricultural use. This implicitly assumes that the benefits from habitat exceed those from agricultural use. For this to be true the benefits that free riders gain from habitat must be greater than any additional costs landowners are forced to bear plus the value of lost production. If humanity is indeed faced with an endangered species crisis driven by habitat loss then the assumption would appear to be true.

Humanity's understanding of the exact nature and extent of the benefits that free riders accrue from additional habitat is nebulous at best. If as was averred above the

market for agricultural land, in the agricultural region of Saskatchewan, is perfectly competitive and if agriculture is the next best use of the land after habitat then the current price of agricultural land should represent the opportunity cost that the benefits of habitat must equal or exceed at the margin. That is, if landowners can earn the same or greater return from land used as habitat as they can for land used for agriculture, they will use it for habitat. Thus, in economic theory the optimal amount of habitat will be that amount of habitat such that the benefits earned from the last unit of habitat would be equal to what could be earned had that last unit been used for agriculture instead. The question then becomes one of what constitutes the mix of types of land necessary to form the 12% the Bruntland Commission specifies.

Theory suggests that at the margin for optimal land use to be achieved land should be used for its highest value purpose. Gray, Burden and Dehaan draw a distinction between land's physical margin and its economic margin. Their basic findings suggest that because of other production risks economically marginal land can differ from physically marginal land (Gray Burden and Dehaan (1994)). That is, land can be ill suited for agricultural purposes for physical reasons, it may be marshy or sandy for instance or for economic reasons, say distance to markets. This implies that if habitat is drawn from land that at the margin is uneconomical for agriculture that a mix of different soil types is still possible. This, of course suggests that if habitat is drawn only from least economic portions of the agricultural land base that it should still be distributed through out the agricultural region of the province. Thus, it would seem reasonable to convert the

least economically viable agricultural land to habitat. This suggests that the costs of habitat can be calculated by examining the economic viability of any particular piece of land, choosing those that will be cheapest.

8.3 A Method of Valuing Habitat

Something similar to this was done in **The Economic and Sociological Evaluation of Land Use Options, Saskatchewan Implementation Plan of The North American Waterfowl Management Plan** (Gray, Rosassen, Taylor, Burden and Stefanson (1992)). This compares the cash rent, paid by DUC under the Prairie Care lease of uplands for nesting for waterfowl, to what the farmer could expect to earn, as the landlord under a one-third to the landlord crop share lease. They do this by creating representative farm budgets. They commence with a soil class G budget, the most prevalent soil classification in the area (Quill Lakes region of Saskatchewan), and adjust it for the other soil classes by prorating the G budget by the ratio of expected yields of the enterprise in soil class 'X' divided by the expected yields of the enterprise in soil class 'G'. Income is calculated by taking the area average yields for each soil classification multiplied by GRIP prices over a rotation that represents the then ten year average rotation in the area. The rotation is expressed as a ratio of the enterprise, seeding wheat, barley, canola or summerfallowing, acreage, by soil classification, to the total acreage in the area by soil classification (see table 1 in the appendix F). With this model they concluded that the cash leases paid by DUC were roughly comparable to what the farmer

could expect, for a return to land, were he to farm the land himself or lease it to another farmer on a one-third to the landlord crop share lease, rather then lease it to DUC as nesting habitat. Using this procedure they found that under the prairie CARE leases that DUC was paying farmers a return which was roughly equivalent to what they could earn as landlords under a one-third to the landlord crop share (See table 13 in Appendix F).

This result was generated by adding to income what Gray, Rosaasen, Taylor, Burden and Stefanson call an inventory adjustment. They credit the budget they use as coming from Top Management Workshop data. In a footnote to the budget they call the miscellaneous income line of the budget an inventory adjustment (Gray, Rosaasen, Taylor, Burden and Stefanson (1992)), in the lexicon of the Top Management Workshop miscellaneous income includes things like straw and subsidies, this suggests that they may have double counted the GRIP subsidy. In any event, within a cash accounting world, such as Canadian agriculture, this adjustment is difficult to justify. It would seem more likely that farmers would be more interested in specific annual earnings from their various enterprises in a given year, rather then some form of accrued income earnings. Particularly, when comparing those earnings to an annual cash lease payment. Correcting for this, but otherwise following the same procedure, yields substantial rents to the representative farm, generated by leasing property to DUC (see Appendix F table 10). These rents range from a high of seven dollars and ninety cents, to a low of five dollars and forty cents, depending upon soil classification. These rents become even larger ranging from fifteen dollars and seventy-two cents to eight dollars and thirty-four cents, if

one utilizes the estimates of 1992 farmgate prices for the three commodities that Gray, Rosaasen, Taylor, Burden and Stefanson provide (see table 12 in Appendix F). As is clear from tables 10 and 12, the prairie CARE lease payments provide returns to land far in excess of the one-third crop share lease.

One further observation is in order, regarding the comparison between the crop share and the Prairie CARE leases. It is readily apparent from tables 10 and 12 that as land quality falls the premium extracted by entering a Prairie Care lease, at least in percentage terms, increases. That is, DUC is paying relatively more money for relatively poorer farming land. At first this may appear counter intuitive. It, however, may well be the case that what is poorer farming land may be ideal waterfowl producing land. Land that is covered in potholes with saline soil which is marginal for crop production could be ideal for DUC's purposes, provided that they can establish the grass cover and habitat that they desire. The reason that DUC could expect to pay proportionally higher rents to attract this land, than an observer would expect the producers to be most interested in not farming, may well lie in the ability of the farmers to realize the particular suitability of this land to DUC's purposes. As producer seem aware of the premium that DUC is apparently prepared to pay for this more marginal crop producing land they have been able to extract proportionally higher rents from DUC for this more marginal land. This is a typical result from holdup problems.

It is interesting to note that even with rents as large are shown in tables 10 and 12, that some of the participants in the program expressed, when surveyed by Gray, Rosaasen, Taylor, Burden and Stefanson the opinion that the compensation was inadequate. Economic theory, of course, suggests that such an attitude must be irrational, given that these producers voluntarily entered the program. Of those surveyed producers, who were not in the program, a significantly smaller percentage expressed the opinion that the compensation was inadequate (Gray, Rosaasen, Taylor, Burden and Stefanson (1992)). It is submitted that if the dissatisfaction expressed is anything other then an attempt to improve the farmers negotiating position, in the hope of extracting even more substantial rents when these contracts are renegotiated, the disgruntled producers must be viewing the payment as compensation for the negative externalities associated with waterfowl as well as returns to land.

While it is possible that the participating farmers view the lease payment as, at least partially, compensation for the negative externalities associated with having large numbers of wild waterfowl, it must be remembered that this can only be partial. The Waterfowl Crop Damage Compensation Program, administered by the Saskatchewan Crop Insurance Corporation, will pay for seventy percent of the damage inflicted by waterfowl at the then current crop insurance price for that commodity (http://www.gov.sk.ca/agfood/scic/addprog.htm of 29 MAR 97). Thus, any compensatory value, that the farmers perceive themselves as receiving, must be for the thirty percent of the loss not covered by the Waterfowl Crop Damage Compensation

Program, or for some other externality such as a perceived increase in the risk of fire due to the abundance of dry grass that the nesting cover programs tend to cause in an area. Finally, there is, at least, one other potential thing that farmers might view themselves as being compensated for. This is, of course, the costs associated with reverting the land leased to DUC to crop production land at the expiration of the lease[8].

In another attempt to ascertain the likely costs associated with habitat protection as part of the survey respondents were asked to indicate the amount of their operations land base that they would be prepared to return to habitat for property tax relief and annual cash payments of ten, twenty, thirty and forty dollars per acre. Respondents were given the choice of zero, five, ten, twenty or fifty per cent of the land base, or they could elect other and specify a percentage not listed. The median responses was zero for every option except the forty dollar payment were one more respondent elected the other category over zero with a median response of one hundred per cent in the other category. This methodology shares the typical problems associated with contingent valuation, that is the respondents have very little incentive to tell the truth. This is clearly evident from the responses received. Forty dollars per acre per year represents a cash lease that most landlords would unquestionable accept for good productive crop land, yet twenty-six per cent of the respondents claimed that they would not cede any of their operations' land

[8] I am indebted to Dick Schoney who raised this issue with me in a discussion that we had while we were working on this study. In the same conversation Dr. Schoney also pointed out that as the lease payments under this program are cash payments that a certainty equivalent to the crop share may be a more appropriate comparison then the crop share, however he also conceded that the length of the lease is such

base for such a payment, never mind any of their best land. Thus, based on Gray's Rosaasen's, Taylor's, Burden's and Stefanson's work it seems likely that an annual payment in the neighborhood of twenty dollars per acre should attract the one to two million acres that it appears are necessary to get to the eight million acres of land that the Bruntland Commission suggests. Assuming that all of these numbers are correct and doing the multiplication suggests that the total costs to be born by someone to arrive at a level of habitat that allows sustainable human existence in the agricultural portion of Saskatchewan will be some twenty to forty million dollars per year.

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that a certainty equivalent would need to be adjusted for the risk inherent in the length of the contract and to do so, with any accuracy, is a problem that the discipline needs to further address.

CHAPTER NINE

CONCLUSIONS AND AREAS FOR FURTHER RESEARCH

9.1 Conclusions

If the results of the survey reflect true responses by the critical landowners, then it would appear that had the Bill become law there is good reason to believe that it would not have proven effective in protecting endangered species and their habitats even given the relatively pro conservation stance found among Saskatchewan cattle producers. This likely is a result of the perception amongst the survey sample that the costs that the Bill was likely to impose on the owners of private land would have exceeded the benefits to those same landowners. The costs imposed by the Bill can, of course, be avoided by landowners by the simple expedient of not complying with the Bill. The survey further suggests that the social costs of not complying are low. As the analysis finds no significant differences between Canada and the United States in respect to the enforcement of laws we cannot expect that Canadians would have reacted any differently towards the Bill, had it become law, than Americans have reacted towards the **Endangered Species Act, 1973**. This suggests, that had the Bill become law, that it would have been reasonable to expect compliance problems with the Bill not unlike those suffered by the Act.

As the Bill was not likely to be successful, in regards to private land, as it failed to address the free rider problem in any meaningful way, the question of whether or not prohibitive policy has any place in what is essentially a land use problem arises. Coupled with some other policy, such as the American Conservation Reserve Program the prohibiting of killing endangered species may prove more palatable to the land owning community. As long as there is some incentive that the land owning community can capture to go along with habitat restoration and protection it will doubtless become more inclined to engage in such activity. Should this incentive be tied to the presence of endangered species it will be in the land owning communities best interest to ensure that endangered species are present, and thus the social costs associated with noncompliance with legislation like the Bill will rise. Similarly the probability of detection should also rise, if land owners need endangered species present to access some tax payer funded program it is in their best interest to report individuals who breach prohibitions on the killing of endangered species. The combination of these two effects should render compliance with prohibitive legislation like the Bill more palatable to the land owning community. It bears notice that if the compensation regulations under Bill C-5 are such that they seek an efficient allocation of critical habitat that this is essentially what the Government of Canada will have done.

The work of Gray, Rosaasen, Taylor, Burden and Stefanson suggests that a policy that pays landowners in the neighborhood of twenty dollars per acre per year should be sufficient to advance the habitat protection and restoration goal. This would also suggest

that had the Bill became law and been effectively implemented, which appears to be unlikely, that landowners, had they remained uncompensated, would have faced costs of the same magnitude.

9.2 Policy Recommendations

From the foregoing it appears that a policy package meant to address a habitat driven endangered species problem needs to consider several things. First and foremost it must address the free rider problem. This is the tendency to under invest in public goods on the part of individual agents because of their inability to extract the benefits that others receive from the agent's investment. Secondly, the policy bundle should seek to limit to as great an extent as is possible any distortions in the economy that encourage the production of grains and oilseeds. Thirdly, it should seek to avoid wasting resources on attempts to save doomed species. Finally, a successful policy package will require a broadening of approach from that of species by species protection to a more generalized ecosystem protection approach.

Table 9.1, that follows, summarizes argument made earlier respecting several steps that governments have taken or could take that, in the long run, should move land from grain and oilseed production into pasture and other better forms of habitat. These include the abandonment of GRIP, the repeal of the transportation subsidy under the

Table 9.1 Summary of Existing and Proposed Policies that can Affect Land Use Decisions

	Cost Bearer	Direct Habitat Protection	Determining Factor	Solve Free Riding on land owners	enforcement problems
Remove GRIP	Land Owner	no	GATT	yes	no
Remove WGTA	Land Owner	no	Transportation Policy	yes	no
Act	Land Owner	yes	biological evidence	no	yes
Bill	Land Owner	yes	biological evidence	no	yes
Sask. Act	Land Owner	with recovery plan	cost/benefit	likely not but better than Act or Bill	likely not but better than Act or Bill
NAWMP	tax payers and hunters	yes	presumably habitat quality	yes	no
Conservation Easements	Concerned Citizens	yes	presumably habitat quality	yes	no
Conservation Reserve	tax payers	yes	presumably habitat quality	yes	no
Bill C-5/C-33	tax payers	yes	biological evidence	yes, if regulations drafted correctly	no

WGTA, the legislative establishment of conservation easements, the North American Waterfowl Management Plan and paying land owners to make the change like the American Conservation Reserve Program. As is also readily apparent from table 9.1 there are several steps that governments have taken or could take that are, or can be expected to prove, adverse to the policy goal of protecting habitat. These include the Act,

the Bill and the Saskatchewan Act. From table 9.1 two groups appear from the summarized policies, those with and those without enforcement problems. The principal difference between these two groups of policies, as summarized, is their ability to solve the free riding problem with respect to landowners.

This ability to solve the free riding problem takes one of two forms. The first is to compensate landowners and includes: NAWMP, conservation easements, conservation reserves and Bill C-5/C-33 depending upon the nature of their associated regulations . The second that includes the removal of the WGTA and GRIP insures that the landowner has no means to avoid the costs imposed or benefits removed by the policy. A policy package that uses either or both of these means to overcome the free rider incentive to under invest will prove useful in achieving habitat protection.

Removing distortions in the economy that promote the production of grains and oilseeds does not promote direct habitat protection. It will, however, cause land to be used, by rational agents, in that manner which generates the highest return possible to that land. This will lead to marginal grain and oilseed producing land moving into pasture and other better forms of habitat. Thus, while in Saskatchewan there remain limited subsidies for grain and oilseed production to add new subsidies would be perverse to the goal of protecting habitat.

Avoiding a waste of resources on doomed species and broadening the scope of efforts beyond species by species protection go hand in hand. The challenge is, of course, how to accomplish this. Essentially both aims require decisions to be made. Decisions must be made about which species are doomed, about what is necessary to maintain an ecosystem. The discretion granted to the minister by the Sask. Act is a means to accomplish this decision making. The administrative law structure that has developed provides a means to avoid abuse of this discretion on the part of the minister. The problem with this solution is that ecosystems cannot speak for themselves and the public interest standing rules in Canada are not generally broad enough to allow others to speak for an ecosystem. Thus, a policy bundle aimed at protecting habitat should include procedures for automatic public interest standing to seek judicial review of either ministerial action or inaction, much as the Bill and Bill C-33 and Bill C-5 do. While this has the potential to generate substantial litigation, allowing actions only against the minister and granting automatic intervenor standing to anyone who can show a pecuniary interest while making solicitor and client cost, or perhaps double or treble costs, automatic against unsuccessful applicants should substantially limit frivolous or vexatious litigation.

Thus, a policy package to successfully protect habitat in Saskatchewan should avoid subsidizing grain and oil seed production. It should grant a fairly wide ministerial discretion to make decisions respecting what should be protected where. This discretion will need to be subject to the standing and cost changes suggested above. The policy

package will also have to address the free rider problem in a manner that avoids compliance problems. Given the current property rights system that is going to require expenditures from the public purse. Whether these expenditures should take the form of tax concessions in programs such as the conservation easement program, or direct payments to landowners for set asides in programs such as the American Conservation Reserve Program, or subsidies for the production of grazing livestock is beyond the scope of this study.

9.3 Limitations of this Study

This study is clearly limited in the fact that it relies upon survey data. This has two key implications. Firstly, given the impracticality of using a revealed preferences surveying technique there is no way to guarantee that the respondents provided responses that truly reveal their opinions. Secondly, while there is a substantial literature dedicated to the drawing of statistical inferences regarding a population from a sample, short of a census there is no means to assure that the sample is truly representative of the population.

The reliance on the premises set out in section 1.4 is another clear limitation on this work. If our society is not in the presence of an extinction crisis caused by lack of habitat that is indicative of a want of a level of biodiversity necessary to ensure our society's existence, then the recommendations in this thesis are of questionable use.

Following Becker (1974) to model compliance inflicts upon the study the inherent limits of Becker's model. Taken to the extreme under Becker's model any outlawed behavior can be eliminated by imposing an infinite sentence even if there is an infinitesimal probability of conviction, unless there is an infinite benefit to be obtained from breaking the law. That humanity continues to observe the commission of capital offences for little or no apparent gain that result routinely in conviction and execution suggests that in the extremes, at least, the model is flawed. This concern is somewhat alleviated by the fact that the study is concerned with finite penalties and probabilities of conviction.

This study is also limited by its reliance on the Bruntland Commissions estimate of 12% of land area as being the necessary habitat to support sustainable human existence. While this estimate was undoubtedly based on the best evidence available to the Commission the underlying biological knowledge is not sufficient to determine if this estimate is anything beyond a best guess, and in no way can be taken to be optimal.

9.4 Areas for further Research

There is a considerable amount of work that remains to be done in this area before more definitive conclusions can be drawn. In order to determine if optimal levels of habitat are being achieved requires a far superior understanding of the relationships between ecosystems and the manner in which they abate pollutants. It will also be

necessary to achieve a far greater understanding of the internal functions of ecosystems to ascertain those species whose extinction will have the least impact on humanity. In other words, humanity has to determine more precisely that level of natural capital stock that cannot be replaced by man made capital. If these relationships and levels can be accurately determined then the benefits that society in general receives from the natural environment should be amenable to more accurate determination, the costs of achieving those benefits can be compared to the benefits and optimal levels determined.

The concern expressed in the previous section respecting Becker's model of compliance suggests another area were further study is necessary. The area of compliance requires further study. Until economists can explain why capital punishment fails to provide a complete deterrent to crime our discipline's understanding of human behavior is suspect.

Finally, given that Bill C-5 has gotten closer to becoming law than any of the Federal Government's previous legislative attempts in this area, and that Bill C-5 clearly contemplates compensation two further potential issues arise. How exactly does a society set the compensation rules to arise at an optimal level of critical habitat? How do you design the compensation program to minimize rent seeking? That is, how do you determine who should be compensated? If a rancher uses an open grazing system and all that is necessary to achieve the requisite critical habitat protection is the adoption, by that rancher of a rotational grazing system why should the rancher be compensated?

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APPENDIX A

Endangered Species Act

16 U.S.C. Sections 1531-1544

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Section 1531. Congressional findings and declaration of purposes and policy [ESA Section 2]

(a) Findings

The Congress finds and declares that -

(1) various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation;

(2) other species of fish, wildlife, and plants have been so depleted in numbers that they are in danger of or threatened with extinction;

(3) these species of fish, wildlife, and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people;

(4) the United States has pledged itself as a sovereign state in the international community to conserve to the extent practicable the various species of fish or wildlife and plants facing extinction, pursuant to -

(A) migratory bird treaties with Canada and Mexico;

(B) the Migratory and Endangered Bird Treaty with Japan;

(C) the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere;

(D) the International Convention for the Northwest Atlantic Fisheries;

(E) the International Convention for the High Seas Fisheries of the North Pacific Ocean;

(F) the Convention on International Trade in Endangered Species of Wild Fauna and Flora; and

(G) other international agreements; and

(5) encouraging the States and other interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards is a key to meeting the Nation's international commitments and to better safeguarding, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants.

(b) Purposes

The purposes of this chapter are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a) of this section.

(c) Policy

(1) It is further declared to be the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this chapter.

(2) It is further declared to be the policy of Congress that Federal agencies shall cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species.

Section 1532. Definitions [ESA Section 3]

For the purposes of this chapter -

(1) The term "alternative courses of action" means all alternatives and thus is not limited to original project objectives and agency jurisdiction.

(2) The term "commercial activity" means all activities of industry and trade, including, but not limited to, the buying or selling of commodities and activities conducted for the purpose of facilitating such buying and selling: Provided, however, That it does not include exhibition of commodities by museums or similar cultural or historical organizations.

(3) The terms "conserve", "conserving", and "conservation" mean to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking (Section 9(a)(1)(B) & Section 3(19)).

(4) The term "Convention" means the Convention on International Trade in Endangered Species of Wild Fauna and Flora, signed on March 3, 1973, and the appendices thereto.

(5)(A) The term "critical habitat" for a threatened or endangered species means -

(i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 1533 of this title, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and

(ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 1533 of this title, upon a determination by the Secretary that such areas are essential for the conservation of the species.

(B) Critical habitat may be established for those species now listed as threatened or endangered species for which no critical habitat has heretofore been established as set forth in subparagraph (A) of this paragraph.

(C) Except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species.

(6) The term "endangered species" means any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insecta

determined by the Secretary to constitute a pest whose protection under the provisions of this chapter would present an overwhelming and overriding risk to man.

(7) The term "Federal agency" means any department, agency, or instrumentality of the United States.

(8) The term "fish or wildlife" means any member of the animal kingdom, including without limitation any mammal, fish, bird (including any migratory, nonmigratory, or endangered bird for which protection is also afforded by treaty or other international agreement), amphibian, reptile, mollusk, crustacean, arthropod or other invertebrate, and includes any part, product, egg, or offspring thereof, or the dead body or parts thereof.

(9) The term "foreign commerce" includes, among other things, any transaction -

(A) between persons within one foreign country;

(B) between persons in two or more foreign countries;

(C) between a person within the United States and a person in a foreign country; or

(D) between persons within the United States, where the fish and wildlife in question are moving in any country or countries outside the United States.

(10) The term "import" means to land on, bring into, or introduce into, or attempt to land on, bring into, or introduce into, any place subject to the jurisdiction of the United States, whether or not such landing, bringing, or introduction constitutes an importation within the meaning of the customs laws of the United States.

(11) Repealed. Pub.L. 97-304, Section 4(b), Oct. 13, 1982, 96 Stat. 1420.

(12) The term "permit or license applicant" means, when used with respect to an action of a Federal agency for which exemption is sought under section 1536 of this title, any person whose application to such agency for a permit or license has been denied primarily because of the application of section 1536(a) of this title to such agency action.

(13) The term "person" means an individual, corporation, partnership, trust, association, or any other private entity; or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State, municipality, or political subdivision of a State, or of any foreign government; any State, municipality, or political subdivision of a State;
or any other entity subject to the jurisdiction of the United States.

(14) The term "plant" means any member of the plant kingdom, including seeds, roots and other parts thereof.

(15) The term "Secretary" means, except as otherwise herein provided, the Secretary of the Interior or the Secretary of Commerce as program responsibilities are vested pursuant to the provisions of Reorganization Plan Numbered 4 of 1970; except that with respect to the enforcement of the provisions of this chapter and the Convention which pertain to the importation or exportation of terrestrial plants, the term also means the Secretary of Agriculture.

(16) The term "species" includes any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.

(17) The term "State" means any of the several States, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the Virgin Islands, Guam, and the Trust Territory of the Pacific Islands.

(18) The term "State agency" means any State agency, department, board, commission, or other governmental entity which is responsible for the management and conservation of fish, plant, or wildlife resources within a State.

(19) The term "take" (Section 9(a)(1)(B) & Section 3(3)) means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

(20) The term "threatened species" means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

(21) The term "United States", when used in a geographical context, includes all States.

Section 1533. Determination of endangered species and threatened species
[ESA Section 4]

(a) Generally

(1) The Secretary shall by regulation promulgated in accordance with subsection (b) of this section determine whether any species is an endangered species or a threatened species because of any of the following factors:

(A) the present or threatened destruction, modification, or curtailment of its habitat or range;

(B) overutilization for commercial, recreational, scientific, or educational purposes;

(C) disease or predation;

(D) the inadequacy of existing regulatory mechanisms; or

(E) other natural or manmade factors affecting its continued existence.

(2) With respect to any species over which program responsibilities have been vested in the Secretary of Commerce pursuant to Reorganization Plan Numbered 4 of 1970 -

(A) in any case in which the Secretary of Commerce determines that such species should -

(i) be listed as an endangered species or a threatened species, or

(ii) be changed in status from a threatened species to an endangered species, he shall so inform the Secretary of the Interior, who shall list such species in accordance with this section;

(B) in any case in which the Secretary of Commerce determines that such species should -

(i) be removed from any list published pursuant to subsection (c) of this section, or

(ii) be changed in status from an endangered species to a threatened species, he shall recommend such action to the Secretary of the Interior, and the Secretary of the Interior, if he concurs in the recommendation, shall implement such action; and

(C) the Secretary of the Interior may not list or remove from any list any such species, and may not change the status of any such species which are listed, without a prior favorable determination made pursuant to this section by the Secretary of Commerce.

(3) The Secretary, by regulation promulgated in accordance with subsection (b) of this section and to the maximum extent prudent and determinable -

(A) shall, concurrently with making a determination under paragraph (1) that a species is an endangered species or a threatened species, designate any habitat of such species which is then considered to be critical habitat; and

(B) may, from time-to-time thereafter as appropriate, revise such designation.

(b) Basis for determinations

(1)(A) The Secretary shall make determinations required by subsection (a) (1) of this section solely on the basis of the best scientific and commercial data available to him after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.

(B) In carrying out this section, the Secretary shall give consideration to species which have been -

(i) designated as requiring protection from unrestricted commerce by any foreign nation, or pursuant to any international agreement; or

(ii) identified as in danger of extinction, or likely to become so within the foreseeable future, by any State agency or by any agency of a foreign nation that is responsible for the conservation of fish or wildlife or plants.

(2) The Secretary shall designate critical habitat, and make revisions thereto, under subsection (a) (3) of this section on the basis of the best scientific data available and after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned.

(3)(A) To the maximum extent practicable, within 90 days after receiving the petition of an interested person under section 553(e) of Title 5 to add a species to, or to remove a species from, either of the lists published under subsection (c) of this section, the Secretary shall make a finding as to whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted. If such a petition is found to present such information, the Secretary shall promptly commence a review of the status of the species concerned. The Secretary shall promptly publish each finding made under this subparagraph in the Federal Register.

(B) Within 12 months after receiving a petition that is found under subparagraph (A) to present substantial information indicating that the petitioned action may be warranted, the Secretary shall make one of the following findings:

(i) The petitioned action is not warranted, in which case the Secretary shall promptly publish such finding in the Federal Register.

(ii) The petitioned action is warranted, in which case the Secretary shall promptly publish in the Federal Register a general notice and the complete text of a proposed regulation to implement such action in accordance with paragraph (5).

(iii) The petitioned action is warranted, but that -

(I) the immediate proposal and timely promulgation of a final regulation implementing the petitioned action in accordance with paragraphs (5) and (6) is precluded by pending proposals to determine whether any species is an endangered species or a threatened species, and

(II) expeditious progress is being made to add qualified species to either of the lists published under subsection (c) of this section and to remove from such lists species for which the protections of this chapter are no longer necessary, in which case the Secretary shall promptly publish such finding in the Federal Register, together with a description and evaluation of the reasons and data on which the finding is based.

(C) (i) A petition with respect to which a finding is made under subparagraph (B)(iii) shall be treated as a petition that is resubmitted to the Secretary under subparagraph (A) on the date of such finding and that presents substantial scientific or commercial information that the petitioned action may be warranted.

(ii) Any negative finding described in subparagraph (A) and any finding described in subparagraph (B) (i) or (iii) shall be subject to judicial review.

(iii) The Secretary shall implement a system to monitor effectively the status of all species with respect to which a finding is made under subparagraph (B)(iii) and shall make prompt use of the authority under paragraph 7 to prevent a significant risk to the well being of any such species.

(D) (i) To the maximum extent practicable, within 90 days after receiving the petition of an interested person under section 553(e) of Title 5, to revise a critical habitat designation, the Secretary shall make a finding as to whether the petition presents substantial scientific information indicating that the revision may be warranted. The Secretary shall promptly publish such finding in the Federal Register.

(ii) Within 12 months after receiving a petition that is found under clause (i) to present substantial information indicating that the requested revision may be warranted, the Secretary shall determine how he intends to proceed with the requested revision, and shall promptly publish notice of such intention in the Federal Register.

(4) Except as provided in paragraphs (5) and (6) of this subsection, the provisions of section 553 of Title 5 (relating to rulemaking procedures), shall apply to any regulation promulgated to carry out the purposes of this chapter.

(5) With respect to any regulation proposed by the Secretary to implement a determination, designation, or revision referred to in subsection (a) (1) or (3) of this section, the Secretary shall -

(A) not less than 90 days before the effective date of the regulation -

(i) publish a general notice and the complete text of the proposed regulation in the Federal Register, and

(ii) give actual notice of the proposed regulation (including the complete text of the regulation) to the State agency in each State in which the species is believed to occur, and to each county or equivalent jurisdiction in which the species is believed to occur, and invite the comment of such agency, and each such jurisdiction, thereon;

(B) insofar as practical, and in cooperation with the Secretary of State, give notice of the proposed regulation to each foreign nation in which the species is believed to occur or whose citizens harvest the species on the high seas, and invite the comment of such nation thereon;

(C) give notice of the proposed regulation to such professional scientific organizations as he deems appropriate;

(D) publish a summary of the proposed regulation in a newspaper of general circulation in each area of the United States in which the species is believed to occur; and

(E) promptly hold one public hearing on the proposed regulation if any person files a request for such a hearing within 45 days after the date of publication of general notice.

(6)(A) Within the one-year period beginning on the date on which general notice is published in accordance with paragraph (5) (A) (i) regarding a proposed regulation, the Secretary shall publish in the Federal Register -

(i) if a determination as to whether a species is an endangered species or a threatened species, or a revision of critical habitat, is involved, either -

(I) a final regulation to implement such determination,

(II) a final regulation to implement such revision or a finding that such revision should not be made,

(III) notice that such one-year period is being extended under subparagraph (B) (i), or

(IV) notice that the proposed regulation is being withdrawn under subparagraph (B) (ii), together with the finding on which such withdrawal is based; or

(ii) subject to subparagraph (C), if a designation of critical habitat is involved, either -

(I) a final regulation to implement such designation, or

(II) notice that such one-year period is being extended under such subparagraph.

(B) (i) If the Secretary finds with respect to a proposed regulation referred to in subparagraph (A) (i) that there is substantial disagreement regarding the sufficiency or accuracy of the available data relevant to the determination or revision concerned, the Secretary may extend the one-year period specified in subparagraph (A) for not more than six months for purposes of soliciting additional data.

(ii) If a proposed regulation referred to in subparagraph (A) (i) is not promulgated as a final regulation within such one-year period (or longer period if extension under clause (i) applies) because the Secretary finds that there is not sufficient evidence to justify the action proposed by the regulation, the Secretary shall immediately withdraw the regulation. The finding on which a withdrawal is based shall be subject to judicial review. The Secretary may not propose a regulation that has previously been withdrawn under this clause unless he determines that sufficient new information is available to warrant such proposal.

(iii) If the one-year period specified in subparagraph (A) is extended under clause (i) with respect to a proposed regulation, then before the close of such extended period the Secretary shall publish in the Federal Register either a final regulation to implement the determination or revision concerned, a finding that the revision should not be made, or a notice of withdrawal of the regulation under clause (ii), together with the finding on which the withdrawal is based.

(C) A final regulation designating critical habitat of an endangered species or a threatened species shall be published concurrently with the final regulation implementing the determination that such species is endangered or threatened, unless the Secretary deems that -

(i) it is essential to the conservation of such species that the regulation implementing such determination be promptly published; or

(ii) critical habitat of such species is not then determinable, in which case the Secretary, with respect to the proposed regulation to designate such habitat, may extend the one-year period specified in subparagraph (A) by not more than one additional year, but not

later than the close of such additional year the Secretary must publish a final regulation, based on such data as may be available at that time, designating, to the maximum extent prudent, such habitat.

(7) Neither paragraph (4), (5), or (6) of this subsection nor section 553 of Title 5 shall apply to any regulation issued by the Secretary in regard to any emergency posing a significant risk to the well-being of any species of fish or wildlife or plants, but only if -

(A) at the time of publication of the regulation in the Federal Register the Secretary publishes therein detailed reasons why such regulation is necessary; and

(B) in the case such regulation applies to resident species of fish or wildlife, or plants, the Secretary gives actual notice of such regulation to the State agency in each State in which such species is believed to occur.

Such regulation shall, at the discretion of the Secretary, take effect immediately upon the publication of the regulation in the Federal Register. Any regulation promulgated under the authority of this paragraph shall cease to have force and effect at the close of the 240-day period following the date of publication unless, during such 240-day period, the rulemaking procedures which would apply to such regulation without regard to this paragraph are complied with. If at any time after issuing an emergency regulation the Secretary determines, on the basis of the best appropriate data available to him, that substantial evidence does not exist to warrant such regulation, he shall withdraw it.

(8) The publication in the Federal Register of any proposed or final regulation which is necessary or appropriate to carry out the purposes of this chapter shall include a summary by the Secretary of the data on which such regulation is based and shall show the relationship of such data to such regulation; and if such regulation designates or revises critical habitat, such summary shall, to the maximum extent practicable, also include a brief description and evaluation of those activities (whether public or private) which, in the opinion of the Secretary, if undertaken may adversely modify such habitat, or may be affected by such designation.

(c) Lists

(1) The Secretary of the Interior shall publish in the Federal Register a list of all species determined by him or the Secretary of Commerce to be endangered species and a list of all species determined by him or the Secretary of Commerce to be threatened species. Each list shall refer to the species contained therein by scientific and common name or names, if any, specify with respect to each such species over what portion of its range it is endangered or threatened, and specify any critical habitat within such range. The Secretary shall from time to time revise each list published under the authority of this subsection to reflect recent determinations, designations, and revisions made in accordance with subsections (a) and (b) of this section.

(2) The Secretary shall -

(A) conduct, at least once every five years, a review of all species included in a list which is published pursuant to paragraph (1) and which is in effect at the time of such review; and
(B) determine on the basis of such review whether any such species should -

(i) be removed from such list;

(ii) be changed in status from an endangered species to a threatened species; or

(iii) be changed in status from a threatened species to an endangered species.

Each determination under subparagraph (B) shall be made in accordance with the provisions of subsections (a) and (b) of this section.

(d) Protective regulations

Whenever any species is listed as a threatened species pursuant to subsection (c) of this section, the Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation of such species. The Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 1538(a) (1) of this title, in the case of fish or wildlife, or section 1538(a) (2) of this title, in the case of plants, with respect to endangered species; except that with respect to the taking of resident species of fish or wildlife, such regulations shall apply in any State which has entered into a cooperative agreement pursuant to section 1535(c) of this title only to the extent that such regulations have also been adopted by such State.

(e) Similarity of appearance cases

The Secretary may, by regulation of commerce or taking, and to the extent he deems advisable, treat any species as an endangered species or threatened species even though it is not listed pursuant to this section if he finds that -

(A) such species so closely resembles in appearance, at the point in question, a species which has been listed pursuant to such section that enforcement personnel would have substantial difficulty in attempting to differentiate between the listed and unlisted species;

(B) the effect of this substantial difficulty is an additional threat to an endangered or threatened species; and

(C) such treatment of an unlisted species will substantially facilitate the enforcement and further the policy of this chapter.

(f) Recovery plans

(1) The Secretary shall develop and implement plans (hereinafter in this subsection referred to as "recovery plans") for the conservation and survival of endangered species and threatened species listed pursuant to this section, unless he finds that such a plan will not promote the conservation of the species. The Secretary, in developing and implementing recovery plans, shall, to the maximum extent practicable -

(A) give priority to those endangered species or threatened species, without regard to taxonomic classification, that are most likely to benefit from such plans, particularly those species that are, or may be, in conflict with construction or other development projects or other forms of economic activity;

(B) incorporate in each plan -

(i) a description of such site-specific management actions as may be necessary to achieve the plan's goal for the conservation and survival of the species;

(ii) objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of this section, that the species be removed from the list; and

(iii) estimates of the time required and the cost to carry out those measures needed to achieve the plan's goal and to achieve intermediate steps toward that goal.

(2) The Secretary, in developing and implementing recovery plans, may procure the services of appropriate public and private agencies and institutions, and other qualified persons. Recovery teams appointed pursuant to this subsection shall not be subject to the Federal Advisory Committee Act.

(3) The Secretary shall report every two years to the Committee on Environment and Public Works of the Senate and the Committee on Merchant Marine and Fisheries of the House of Representatives on the status of efforts to develop and implement recovery plans for all species listed pursuant to this section and on the status of all species for which such plans have been developed.

(4) The Secretary shall, prior to final approval of a new or revised recovery plan, provide public notice and an opportunity for public review and comment on such plan. The Secretary shall consider all information presented during the public comment period prior to approval of the plan.

(5) Each Federal agency shall, prior to implementation of a new or revised recovery plan, consider all information presented during the public comment period under paragraph (4).

(g) Monitoring

(1) The Secretary shall implement a system in cooperation with the States to monitor effectively for not less than five years the status of all species which have recovered to the point at which the measures provided pursuant to this chapter are no longer necessary and which, in accordance with the provisions of this section, have been removed from either of the lists published under subsection (c) of this section.

(2) The Secretary shall make prompt use of the authority under paragraph 7 of subsection (b) of this section to prevent a significant risk to the well being of any such recovered species.

(h) Agency guidelines; publication in Federal Register; scope; proposals and amendments: notice and opportunity for comments

The Secretary shall establish, and publish in the Federal Register, agency guidelines to insure that the purposes of this section are achieved efficiently and effectively. Such guidelines shall include, but are not limited to -

(1) procedures for recording the receipt and the disposition of petitions submitted under subsection (b)(3) of this section;

(2) criteria for making the findings required under such subsection with respect to petitions;

(3) a ranking system to assist in the identification of species that should receive priority review under subsection (a)(1) of this section; and

(4) a system for developing and implementing, on a priority basis, recovery plans under subsection (f) of this section.

The Secretary shall provide to the public notice of, and opportunity to submit written comments on, any guideline (including any amendment thereto) proposed to be established under this subsection.

(i) Submission to State agency of justification for regulations inconsistent with State agency's comments or petition

If, in the case of any regulation proposed by the Secretary under the authority of this section, a State agency to which notice thereof was given in accordance with subsection (b)(5)(A)(ii) of this section files comments disagreeing with all or part of the proposed regulation, and the Secretary issues a final regulation which is in conflict with such comments, or if the Secretary fails to adopt a regulation pursuant to an action petitioned

by a State agency under subsection (b)(3) of this section, the Secretary shall submit to the State agency a written justification for his failure to adopt regulations consistent with the agency's comments or petition.

Section 1534 Land Acquisition [ESA Section 5] [omitted]

Section 1535. Cooperation with States [ESA Section 6]

(a) Generally

In carrying out the program authorized by this chapter, the Secretary shall cooperate to the maximum extent practicable with the States Secretary shall cooperate to the maximum extent practicable with the States. Such cooperation shall include consultation with the States concerned before acquiring any land or water, or interest therein, for the purpose of conserving any endangered species or threatened species.

Section 1536. Interagency cooperation [ESA Section 7]

(a) Federal agency actions and consultations

(1) The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this chapter. All other Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this chapter by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 1533 of this title.

(2) Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. In fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available.

(3) Subject to such guidelines as the Secretary may establish, a Federal agency shall consult with the Secretary on any prospective agency action at the request of, and in cooperation with, the prospective permit or license applicant if the applicant has reason to believe that an endangered species or a threatened species may be present in the area affected by his project and that implementation of such action will likely affect such species.

(4) Each Federal agency shall confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under section 1533 of this title or result in the destruction or adverse modification of critical habitat proposed to be designated for such species. This paragraph does not require a limitation on the commitment of resources as described in subsection (d) of this section.

(b) Opinion of Secretary

(1)(A) Consultation under subsection (a) (2) of this section with respect to any agency action shall be concluded within the 90-day period beginning on the date on which initiated or, subject to subparagraph (B), within such other period of time as is mutually agreeable to the Secretary and the Federal agency.

(B) In the case of an agency action involving a permit or license applicant, the Secretary and the Federal agency may not mutually agree to conclude consultation within a period exceeding 90 days unless the Secretary, before the close of the 90th day referred to in subparagraph (A)-

(i) if the consultation period proposed to be agreed to will end before the 150th day after the date on which consultation was initiated, submits to the applicant a written statement setting forth -

(I) the reasons why a longer period is required,

(II) the information that is required to complete the consultation, and

(III) the estimated date on which consultation will be completed; or

(ii) if the consultation period proposed to be agreed to will end 150 or more days after the date on which consultation was initiated, obtains the consent of the applicant to such period.

The Secretary and the Federal agency may mutually agree to extend a consultation period established under the preceding sentence if the Secretary, before the close of such period, obtains the consent of the applicant to the extension.

(2) Consultation under subsection (a) (3) of this section shall be concluded within such period as is agreeable to the Secretary, the Federal agency, and the applicant concerned.

(3)(A) Promptly after conclusion of consultation under paragraph (2) or (3) of subsection (a) of this section, the Secretary shall provide to the Federal agency and the applicant, if any, a written statement setting forth the Secretary's opinion, and a summary of the

information on which the opinion is based, detailing how the agency action affects the species or its critical habitat. If jeopardy or adverse modification is found, the Secretary shall suggest those reasonable and prudent alternatives which he believes would not violate subsection (a) (2) of this section and can be taken by the Federal agency or applicant in implementing the agency action.

(B) Consultation under subsection (a) (3) of this section, and an opinion issued by the Secretary incident to such consultation, regarding an agency action shall be treated respectively as a consultation under subsection (a) (2) of this section, and as an opinion issued after consultation under such subsection, regarding that action if the Secretary reviews the action before it is commenced by the Federal agency and finds, and notifies such agency, that no significant changes have been made with respect to the action and that no significant change has occurred regarding the information used during the initial consultation.

(4) If after consultation under subsection (a)(2) of this section, the Secretary concludes that -

(A) the agency action will not violate such subsection, or offers reasonable and prudent alternatives which the Secretary believes would not violate such subsection;

(B) the taking of an endangered species or a threatened species incidental to the agency action will not violate such subsection; and

(C) if an endangered species or threatened species of a marine mammal is involved, the taking is authorized pursuant to section 1371(a)(5) of this title; the Secretary shall provide the Federal agency and the applicant concerned, if any, with a written statement that -

(i) specifies the impact of such incidental taking on the species,

(ii) specifies those reasonable and prudent measures that the Secretary considers necessary or appropriate to minimize such impact,

(iii) in the case of marine mammals, specifies those measures that are necessary to comply with section 1371(a)(5) of this title with regard to such taking, and

(iv) sets forth the terms and conditions (including, but not limited to, reporting requirements) that must be complied with by the Federal agency or applicant (if any), or both, to implement the measures specified under clauses (ii) and (iii).

(c) Biological assessment

(1) To facilitate compliance with the requirements of subsection (a) (2) of this section, each Federal agency shall, with respect to any agency action of such agency for which no contract for construction has been entered into and for which no construction has begun on November 10, 1978, request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action. If the Secretary advises, based on the best scientific and commercial data available, that such species may be present, such agency shall conduct a biological assessment for the purpose of identifying any endangered species or threatened species which is likely to be affected by such action. Such assessment shall be completed within 180 days after the date on which initiated (or within such other period as is mutually agreed to by the Secretary and such agency, except that if a permit or license applicant is involved, the 180-day period may not be extended unless such agency provides the applicant, before the close of such period, with a written statement setting forth the estimated length of the proposed extension and the reasons therefor) and, before any contract for construction is entered into and before construction is begun with respect to such action. Such assessment may be undertaken as part of a Federal agency's compliance with the requirements of section 102 of the National Environmental Policy Act of 1969 (42 U.S.C. 4332).

(2) Any person who may wish to apply for an exemption under subsection (g) of this section for that action may conduct a biological assessment to identify any endangered species or threatened species which is likely to be affected by such action. Any such biological assessment must, however, be conducted in cooperation with the Secretary and under the supervision of the appropriate Federal agency.

(d) Limitation on commitment of resources

After initiation of consultation required under subsection (a) (2) of this section, the Federal agency and the permit or license applicant shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a) (2) of this section.

(e) Endangered Species Committee

(1) There is established a committee to be known as the Endangered Species Committee (hereinafter in this section referred to as the "Committee").

(2) The Committee shall review any application submitted to it pursuant to this section and determine in accordance with subsection (h) of this section whether or not to grant an exemption from the requirements of subsection (a) (2) of this section for the action set forth in such application.

(3) The Committee shall be composed of seven members as follows:

(A) The Secretary of Agriculture.

(B) The Secretary of the Army.

(C) The Chairman of the Council of Economic Advisors.

(D) The Administrator of the Environmental Protection Agency.

(E) The Secretary of the Interior.

(F) The Administrator of the National Oceanic and Atmospheric Administration.

(G) The President, after consideration of any recommendations received pursuant to subsection (g) (2) (B) of this section shall appoint one individual from each affected State, as determined by the Secretary, to be a member of the Committee for the consideration of the application for exemption for an agency action with respect to which such recommendations are made, not later than 30 days after an application is submitted pursuant to this section.

(4)(A) Members of the Committee shall receive additional pay on account of their service on the Committee.

(B) While away from their homes or regular places of business in the performance of services for the Committee, members of the Committee shall be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in the Government service are allowed expenses under section 5703 of Title 5.

(5)(A) Five members of the Committee or their representatives shall constitute a quorum for the transaction of any function of the Committee, except that, in no case shall any representative be considered in determining the existence of a quorum for the transaction of any function of the Committee if that function involves a vote by the Committee on any matter before the Committee.

(B) The Secretary of the Interior shall be the Chairman of the Committee.

(C) The Committee shall meet at the call of the Chairman or five of its members.

(D) All meetings and records of the Committee shall be open to the public.

(6) Upon request of the Committee, the head of any Federal agency is authorized to detail, on a nonreimbursable basis, any of the personnel of such agency to the Committee to assist it in carrying out its duties under this section.

(7)(A) The Committee may for the purpose of carrying out its duties under this section hold such hearings, sit and act at such times and places, take such testimony, and receive such evidence, as the Committee deems advisable.

(B) When so authorized by the Committee, any member or agent of the Committee may take any action which the Committee is authorized to take by this paragraph.

(C) Subject to the Privacy Act [5 U.S.C.A. Section 552a], the Committee may secure directly from any Federal agency information necessary to enable it to carry out its duties under this section. Upon request of the Chairman of the Committee, the head of such Federal agency shall furnish such information to the Committee.

(D) The Committee may use the United States mails in the same manner and upon the same conditions as a Federal agency.

(E) The Administrator of General Services shall provide to the Committee on a reimbursable basis such administrative support services as the Committee may request.

(8) In carrying out its duties under this section, the Committee may promulgate and amend such rules, regulations, and procedures, and issue and amend such orders as it deems necessary.

(9) For the purpose of obtaining information necessary for the consideration of an application for an exemption under this section the Committee may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents.

(10) In no case shall any representative, including a representative of a member designated pursuant to paragraph (3) (G) of this subsection, be eligible to cast a vote on behalf of any member.

(f) Promulgation of regulations; form and contents of exemption application

Not later than 90 days after November 10, 1978, the Secretary shall promulgate regulations which set forth the form and manner in which applications for exemption shall be submitted to the Secretary and the information to be contained in such applications. Such regulations shall require that information submitted in an application by the head of any Federal agency with respect to any agency action include, but not be limited to -

(1) a description of the consultation process carried out pursuant to subsection (a) (2) of this section between the head of the Federal agency and the Secretary; and

(2) a statement describing why such action cannot be altered or modified to conform with the requirements of subsection (a) (2) of this section.

(g) Application for exemption; report to Committee

(1) A Federal agency, the Governor of the State in which an agency action will occur, if any, or a permit or license applicant may apply to the Secretary for an exemption for an agency action of such agency if, after consultation under subsection (a) (2) of this section, the Secretary's opinion under subsection (b) of this section indicates that the agency action would violate subsection (a) (2) of this section. An application for an exemption shall be considered initially by the Secretary in the manner provided for in this subsection, and shall be considered by the Committee for a final determination under subsection (h) of this section after a report is made pursuant to paragraph (5). The applicant for an exemption shall be referred to as the "exemption applicant" in this section.

(2)(A) An exemption applicant shall submit a written application to the Secretary, in a form prescribed under subsection (f) of this section, not later than 90 days after the completion of the consultation process; except that, in the case of any agency action involving a permit or license applicant, such application shall be submitted not later than 90 days after the date on which the Federal agency concerned takes final agency action with respect to the issuance of the permit or license. For purposes of the preceding sentence, the term "final agency action" mean

(i) a disposition by an agency with respect to the issuance of a permit or license that is subject to administrative review, whether or not such disposition is subject to judicial review; or

(ii) if administrative review is sought with respect to such disposition, the decision resulting after such review. Such application shall set forth the reasons why the exemption applicant considers that the agency action meets the requirements for an exemption under this subsection.

(B) Upon receipt of an application for exemption for an agency action under paragraph (1), the Secretary shall promptly

(i) notify the Governor of each affected State, if any, as determined by the Secretary, and request the Governors so notified to recommend individuals to be appointed to the Endangered Species Committee for consideration of such application; and

(ii) publish notice of receipt of the application in the Federal Register, including a summary of the information contained in the application and a description of the agency action with respect to which the application for exemption has been filed.

(3) The Secretary shall within 20 days after the receipt of an application for exemption, or within such other period of time as is mutually agreeable to the exemption applicant and the Secretary -

(A) determine that the Federal agency concerned and the exemption applicant have -

(i) carried out the consultation responsibilities described in subsection (a) of this section in good faith and made a reasonable and responsible effort to develop and fairly consider modifications or reasonable and prudent alternatives to the proposed agency action which would not violate subsection (a) (2) of this section;

(ii) conducted any biological assessment required by subsection (c) of this section; and

(iii) to the extent determinable within the time provided herein, refrained from making any irreversible or irretrievable commitment of resources prohibited by subsection (d) of this section; or

(B) deny the application for exemption because the Federal agency concerned or the exemption applicant have not met the requirements set forth in subparagraph (A) (i), (ii), and (iii).

The denial of an application under subparagraph (B) shall be considered final agency action for purposes of chapter 7 of Title 5.

(4) If the Secretary determines that the Federal agency concerned and the exemption applicant have met the requirements set forth in paragraph (3) (A) (i), (ii), and (iii) he shall, in consultation with the Members of the Committee, hold a hearing on the application for exemption in accordance with sections 554, 555, and 556 (other than subsection (b) (1) and (2) thereof) of Title 5 and prepare the report to be submitted pursuant to paragraph (5).

(5) Within 140 days after making the determinations under paragraph (3) or within such other period of time as is mutually agreeable to the exemption applicant and the Secretary, the Secretary shall submit to the Committee a report discussing -

(A) the availability of reasonable and prudent alternatives to the agency action, and the nature and extent of the benefits of the agency action and of alternative courses of action consistent with conserving the species or the critical habitat;

(B) a summary of the evidence concerning whether or not the agency action is in the public interest and is of national or regional significance;

(C) appropriate reasonable mitigation and enhancement measures which should be considered by the Committee; and

(D) whether the Federal agency concerned and the exemption applicant refrained from making any irreversible or irretrievable commitment of resources prohibited by subsection (d) of this section.

(6) To the extent practicable within the time required for action under subsection (g) of this section, and except to the extent inconsistent with the requirements of this section, the consideration of any application for an exemption under this section and the conduct of any hearing under this subsection shall be in accordance with sections 554, 555, and 556 (other than subsection (b) (3) of section 556) of Title 5.

(7) Upon request of the Secretary, the head of any Federal agency is authorized to detail, on a nonreimbursable basis, any of the personnel of such agency to the Secretary to assist him in carrying out his duties under this section.

(8) All meetings and records resulting from activities pursuant to this subsection shall be open to the public.

(h) Grant of exemption

(1) The Committee shall make a final determination whether or not to grant an exemption within 30 days after receiving the report of the Secretary pursuant to subsection (g) (5) of this section. The Committee shall grant an exemption from the requirements of subsection (a) (2) of this section for an agency action if, by a vote of not less than five of its members voting in person -

(A) it determines on the record, based on the report of the Secretary, the record of the hearing held under subsection (g) (4) of this section and on such other testimony or evidence as it may receive, that -

(i) there are no reasonable and prudent alternatives to the agency action;

(ii) the benefits of such action clearly outweigh the benefits of alternative courses of action consistent with conserving the species or its critical habitat, and such action is in the public interest;

(iii) the action is of regional or national significance; and

(iv) neither the Federal agency concerned nor the exemption applicant made any irreversible or irretrievable commitment of resources prohibited by subsection (d) of this section; and

(B) it establishes such reasonable mitigation and enhancement measures, including, but not limited to, live propagation, transplantation, and habitat acquisition and improvement,

as are necessary and appropriate to minimize the adverse effects of the agency action upon the endangered species, threatened species, or critical habitat concerned.

Any final determination by the Committee under this subsection shall be considered final agency action for purposes of chapter 7 of Title 5.

(2)(A) Except as provided in subparagraph (B), an exemption for an agency action granted under paragraph (1) shall constitute a permanent exemption with respect to all endangered or threatened species for the purposes of completing such agency action -

(i) regardless whether the species was identified in the biological assessment; and

(ii) only if a biological assessment has been conducted under subsection (c) of this section with respect to such agency action.

(B) An exemption shall be permanent under subparagraph (A) unless -

(i) the Secretary finds, based on the best scientific and commercial data available, that such exemption would result in the extinction of a species that was not the subject of consultation under subsection (a) (2) of this section or was not identified in any biological assessment conducted under subsection (c) of this section, and

(ii) the Committee determines within 60 days after the date of the Secretary's finding that the exemption should not be permanent.

If the Secretary makes a finding described in clause (i), the Committee shall meet with respect to the matter within 30 days after the date of the finding.

(i) Review by Secretary of State; violation of international treaty or other international obligation of United States

Notwithstanding any other provision of this chapter, the Committee shall be prohibited from considering for exemption any application made to it, if the Secretary of State, after a review of the proposed agency action and its potential implications, and after hearing, certifies, in writing, to the Committee within 60 days of any application made under this section that the granting of any such exemption and the carrying out of such action would be in violation of an international treaty obligation or other international obligation of the United States. The Secretary of State shall, at the time of such certification, publish a copy thereof in the Federal Register.

(j) Exemption for national security reasons

Notwithstanding any other provision of this chapter, the Committee shall grant an exemption for any agency action if the Secretary of Defense finds that such exemption is necessary for reasons of national security.

(k) Exemption decision not considered major Federal action; environmental impact statement

An exemption decision by the Committee under this section shall not be a major Federal action for purposes of the National Environmental Policy Act of 1969 [42 U.S.C.A. Section 4321 et seq.]: Provided, That an environmental impact statement which discusses the impacts upon endangered species or threatened species or their critical habitats shall have been previously prepared with respect to any agency action exempted by such order.

(l) Committee order granting exemption; cost of mitigation and enhancement measures; report by applicant to Council on Environmental Quality

(1) If the Committee determines under subsection (h) of this section that an exemption should be granted with respect to any agency action, the Committee shall issue an order granting the exemption and specifying the mitigation and enhancement measures established pursuant to subsection (h) of this section which shall be carried out and paid for by the exemption applicant in implementing the agency action. All necessary mitigation and enhancement measures shall be authorized prior to the implementing of the agency action and funded concurrently with all other project features.

(2) The applicant receiving such exemption shall include the costs of such mitigation and enhancement measures within the overall costs of continuing the proposed action. Notwithstanding the preceding sentence the costs of such measures shall not be treated as project costs for the purpose of computing benefit-cost or other ratios for the proposed action. Any applicant may request the Secretary to carry out such mitigation and enhancement measures. The costs incurred by the Secretary in carrying out any such measures shall be paid by the applicant receiving the exemption. No later than one year after the granting of an exemption, the exemption applicant shall submit to the Council on Environmental Quality a report describing its compliance with the mitigation and enhancement measures prescribed by this section. Such a report shall be submitted annually until all such mitigation and enhancement measures have been completed. Notice of the public availability of such reports shall be published in the Federal Register by the Council on Environmental Quality.

(m) Notice requirement for citizen suits not applicable

The 60-day notice requirement of section 1540(g) of this title shall not apply with respect to review of any final determination of the Committee under subsection (h) of this section granting an exemption from the requirements of subsection (a) (2) of this section.

(n) Judicial review

Any person, as defined by section 1532(13) of this title, may obtain judicial review, under chapter 7 of Title 5, of any decision of the Endangered Species Committee under subsection (h) of this section in the United States Court of Appeals for (1) any circuit wherein the agency action concerned will be, or is being, carried out, or (2) in any case in which the agency action will be, or is being, carried out outside of any circuit, the District of Columbia, by filing in such court within 90 days after the date of issuance of the decision, a written petition for review. A copy of such petition shall be transmitted by the clerk of the court to the Committee and the Committee shall file in the court the record in the proceeding, as provided in section 2112, of Title 28. Attorneys designated by the Endangered Species Committee may appear for, and represent the Committee in any action for review under this subsection.

(o) Exemption as providing exception on taking of endangered species

Notwithstanding sections 1533(d) and 1538(a)(1)(B) and (C) of this title, sections 1371 and 1372 of this title, or any regulation promulgated to implement any such section -

(1) any action for which an exemption is granted under subsection (h) of this section shall not be considered to be a taking of any endangered species or threatened species with respect to any activity which is necessary to carry out such action; and

(2) any taking that is in compliance with the terms and conditions specified in a written statement provided under subsection (b)(4)(iv) of this section shall not be considered to be a prohibited taking of the species concerned.

(p) Exemptions in Presidentially declared disaster areas

In any area which has been declared by the President to be a major disaster area under the Disaster Relief and Emergency Assistance Act [42 U.S.C.A. Section 5121 et seq.], the President is authorized to make the determinations required by subsections (g) and (h) of this section for any project for the repair or replacement of a public facility substantially as it existed prior to the disaster under section 405 or 406 of the Disaster Relief and Emergency Assistance Act [42 U.S.C.A. ss 5171 or 5172], and which the President determines (1) is necessary to prevent the recurrence of such a natural disaster and to reduce the potential loss of human life, and (2) to involve an emergency situation which does not allow the ordinary procedures of this section to be followed. Notwithstanding any other provision of this section, the Committee shall accept the determinations of the President under this subsection.

Section 1537. International cooperation [ESA Section 8]

(a) Financial assistance

As a demonstration of the commitment of the United States to the worldwide protection of endangered species and threatened species, the President may, subject to the provisions of section 1306 of Title 31, use foreign currencies accruing to the United States Government under the Agricultural Trade Development and Assistance Act of 1954 [7 U.S.C.A. Section 1691 et seq.] or any other law to provide to any foreign country (with its consent) assistance in the development and management of programs in that country which the Secretary determines to be necessary or useful for the conservation of any endangered species or threatened species listed by the Secretary pursuant to section 1533 of this title. The President shall provide assistance (which includes, but is not limited to, the acquisition, by lease or otherwise, of lands, waters, or interests therein) to foreign countries under this section under such terms and conditions as he deems appropriate. Whenever foreign currencies are available for the provision of assistance under this section, such currencies shall be used in preference to funds appropriated under the authority of section 1542 of this title.

(b) Encouragement of foreign programs

In order to carry out further the provisions of this chapter, the Secretary, through the Secretary of State, shall encourage -

(1) foreign countries to provide for the conservation of fish or wildlife and plants including endangered species and threatened species listed pursuant to section 1533 of this title;

(2) the entering into of bilateral or multilateral agreements with foreign countries to provide for such conservation; and

(3) foreign persons who directly or indirectly take fish or wildlife or plants in foreign countries or on the high seas for importation into the United States for commercial or other purposes to develop and carry out with such assistance as he may provide, conservation practices designed to enhance such fish or wildlife or plants and their habitat.

Section 1537A. Convention implementation [ESA Section 8A]

(a) Management Authority and Scientific Authority

The Secretary of the Interior (hereinafter in this section referred to as the "Secretary") is designated as the Management Authority and the Scientific Authority for purposes of the Convention and the respective functions of each such Authority shall be carried out through the United States Fish and Wildlife Service.

(b) Management Authority functions

The Secretary shall do all things necessary and appropriate to carry out the functions of the Management Authority under the Convention.

(c) Scientific Authority functions; determinations

(1) The Secretary shall do all things necessary and appropriate to carry out the functions of the Scientific Authority under the Convention.

(2) The Secretary shall base the determinations and advice given by him under Article IV of the Convention with respect to wildlife upon the best available biological information derived from professionally accepted wildlife management practices; but is not required to make, or require any State to make, estimates of population size in making such determinations or giving such advice.

(d) Reservations by the United States under Convention

If the United States votes against including any species in Appendix I or II of the Convention and does not enter a reservation pursuant to paragraph (3) of Article XV of the Convention with respect to that species, the Secretary of State, before the 90th day after the last day on which such a reservation could be entered, shall submit to the Committee on Merchant Marine and Fisheries of the House of Representatives, and to the Committee on the Environment and Public Works of the Senate, a written report setting forth the reasons why such a reservation was not entered.

(e) Wildlife Preservation in Western Hemisphere

(1) The Secretary of the Interior (hereinafter in this subsection referred to as the "Secretary"), in cooperation with the Secretary of State, shall act on behalf of, and represent, the United States in all regards as required by the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (56 Stat. 1354, T.S. 982, hereinafter in this subsection referred to as the "Western Convention"). In the discharge of these responsibilities, the Secretary and the Secretary of State shall consult with the Secretary of Agriculture, the Secretary of Commerce, and the heads of other agencies with respect to matters relating to or affecting their areas of responsibility.

(2) The Secretary and the Secretary of State shall, in cooperation with the contracting parties to the Western Convention and, to the extent feasible and appropriate, with the participation of State agencies, take such steps as are necessary to implement the Western Convention. Such steps shall include, but not be limited to -

(A) cooperation with contracting parties and international organizations for the purpose of developing personnel resources and programs that will facilitate implementation of the Western Convention;

(B) identification of those species of birds that migrate between the United States and other contracting parties, and the habitats upon which those species depend, and the implementation of cooperative measures to ensure that such species will not become endangered or threatened; and

(C) identification of measures that are necessary and appropriate to implement those provisions of the Western Convention which address the protection of wild plants.

(3) No later than September 30, 1985, the Secretary and the Secretary of State shall submit a report to Congress describing those steps taken in accordance with the requirements of this subsection and identifying the principal remaining actions yet necessary for comprehensive and effective implementation of the Western Convention.
(4) The provisions of this subsection shall not be construed as affecting the authority, jurisdiction, or responsibility of the several States to manage, control, or regulate resident fish or wildlife under State law or regulations.

Section 1538. Prohibited acts [ESA Section 9]

(a) Generally

(1) Except as provided in sections 1535(g)(2) and 1539 of this title, with respect to any endangered species of fish or wildlife listed pursuant to section 1533 of this title it is unlawful for any person subject to the jurisdiction of the United States to -

(A) import any such species into, or export any such species from the United States;

(B) take (Section 3(19) & Section 3(3)) any such species within the United States or the territorial sea of the United States;

(C) take any such species upon the high seas;

(D) possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any such species taken in violation of subparagraphs (B) and (C);

(E) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity, any such species;

(F) sell or offer for sale in interstate or foreign commerce any such species; or

(G) violate any regulation pertaining to such species or to any threatened species of fish or wildlife listed pursuant to section 1533 of this title and promulgated by the Secretary pursuant to authority provided by this chapter.

(2) Except as provided in sections 1535(g)(2) and 1539 of this title, with respect to any endangered species of plants listed pursuant to section 1533 of this title, it is unlawful for any person subject to the jurisdiction of the United States to -

(A) import any such species into, or export any such species from, the United States;

(B) remove and reduce to possession any such species from areas under Federal jurisdiction; maliciously damage or destroy any such species on any such area; or remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law;

(C) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity, any such species;

(D) sell or offer for sale in interstate or foreign commerce any such species; or

(E) violate any regulation pertaining to such species or to any threatened species of plants listed pursuant to section 1533 of this title and promulgated by the Secretary pursuant to authority provided by this chapter.

(b) Species held in captivity or controlled environment

(1) The provisions of subsections (a) (1) (A) and (a) (1) (G) of this section shall not apply to any fish or wildlife which was held in captivity or in a controlled environment on (A) December 28, 1973, or (B) the date of the publication in the Federal Register of a final regulation adding such fish or wildlife species to any list published pursuant to subsection (c) of section 1533 of this title: Provided, That such holding and any subsequent holding or use of the fish or wildlife was not in the course of a commercial activity. With respect to any act prohibited by subsections (a) (1) (A) and (a) (1) (G) of this section which occurs after a period of 180 days from (i) December 28, 1973, or (ii) the date of publication in the Federal Register of a final regulation adding such fish or wildlife species to any list published pursuant to subsection (c) of section 1533 of this title, there shall be a rebuttable presumption that the fish or wildlife involved in such act is not entitled to the exemption contained in this subsection.

(2)(A) The provisions of subsection (a) (1) of this section shall not apply to -

(i) any raptor legally held in captivity or in a controlled environment on November 10, 1978; or

(ii) any progeny of any raptor described in clause (i); until such time as any such raptor or progeny is intentionally returned to a wild state.

(B) Any person holding any raptor or progeny described in subparagraph (A) must be able to demonstrate that the raptor or progeny does, in fact, qualify under the provisions of this paragraph, and shall maintain and submit to the Secretary, on request, such inventories, documentation, and records as the Secretary may by regulation require as being reasonably appropriate to carry out the purposes of this paragraph. Such requirements shall not unnecessarily duplicate the requirements of other rules and regulations promulgated by the Secretary.

(c) Violation of Convention

(1) It is unlawful for any person subject to the jurisdiction of the United States to engage in any trade in any specimens contrary to the provisions of the Convention, or to possess any specimens traded contrary to the provisions of the Convention, including the definitions of terms in article I thereof.

(2) Any importation into the United States of fish or wildlife shall, if -

(A) such fish or wildlife is not an endangered species listed pursuant to section 1533 of this title but is listed in Appendix II to the Convention,

(B) the taking and exportation of such fish or wildlife is not contrary to the provisions of the Convention and all other applicable requirements of the Convention have been satisfied,

(C) the applicable requirements of subsections (d), (e), and (f) of this section have been satisfied, and

(D) such importation is not made in the course of a commercial activity, be presumed to be an importation not in violation of any provision of this chapter or any regulation issued pursuant to this chapter.

(d) Imports and exports

(1) In general

It is unlawful for any person, without first having obtained permission from the Secretary, to engage in business -

(A) as an importer or exporter of fish or wildlife (other than shellfish and fishery products which (i) are not listed pursuant to section 1533 of this title as endangered species or

threatened species, and (ii) are imported for purposes of human or animal consumption or taken in waters under the jurisdiction of the United States or on the high seas for recreational purposes) or plants; or

(B) as an importer or exporter of any amount of raw or worked African elephant ivory.

(2) Requirements

Any person required to obtain permission under paragraph (1) of this subsection shall -

(A) keep such records as will fully and correctly disclose each importation or exportation of fish, wildlife, plants, or African elephant ivory made by him and the subsequent disposition made by him with respect to such fish, wildlife, plants, or ivory;

(B) at all reasonable times upon notice by a duly authorized representative of the Secretary, afford such representative access to his place of business, an opportunity to examine his inventory of imported fish, wildlife, plants, or African elephant ivory and the records required to be kept under subparagraph (A) of this paragraph, and to copy such records; and

(C) file such reports as the Secretary may require.

(3) Regulations

The Secretary shall prescribe such regulations as are necessary and appropriate to carry out the purposes of this subsection.

(4) Restriction on consideration of value or amount of African elephant ivory imported or exported

In granting permission under this subsection for importation or exportation of African elephant ivory, the Secretary shall not vary the requirements for obtaining such permission on the basis of the value or amount of ivory imported or exported under such permission.

(e) Reports

It is unlawful for any person importing or exporting fish or wildlife (other than shellfish and fishery products which (1) are not listed pursuant to section 1533 of this title as endangered or threatened species, and (2) are imported for purposes of human or animal consumption or taken in waters under the jurisdiction of the United States or on the high seas for recreational purposes) or plants to fail to file any declaration or report as the Secretary deems necessary to facilitate enforcement of this chapter or to meet the obligations of the Convention.

(f) Designation of ports

(1) It is unlawful for any person subject to the jurisdiction of the United States to import into or export from the United States any fish or wildlife (other than shellfish and fishery products which (A) are not listed pursuant to section 1533 of this title as endangered species or threatened species, and (B) are imported for purposes of human or animal consumption or taken in waters under the jurisdiction of the United States or on the high seas for recreational purposes) or plants, except at a port or ports designated by the Secretary of the Interior. For the purpose of facilitating enforcement of this chapter and reducing the costs thereof, the Secretary of the Interior, with approval of the Secretary of the Treasury and after notice and opportunity for public hearing, may, by regulation, designate ports and change such designations. The Secretary of the Interior, under such terms and conditions as he may prescribe, may permit the importation or exportation at nondesignated ports in the interest of the health or safety of the fish or wildlife or plants, or for other reasons if, in his discretion, he deems it appropriate and consistent with the purpose of this subsection.

(2) Any port designated by the Secretary of the Interior under the authority of section 668cc-4(d) of this title, shall, if such designation is in effect on December 27, 1973, be deemed to be a port designated by the Secretary under paragraph (1) of this subsection until such time as the Secretary otherwise provides.

(g) Violations

It is unlawful for any person subject to the jurisdiction of the United States to attempt to commit, solicit another to commit, or cause to be committed, any offense defined in this section.

Section 1539. Exceptions [ESA Section 10]

(a) Permits

(1) The Secretary may permit, under such terms and conditions as he shall prescribe -

(A) any act otherwise prohibited by section 1538 of this title for scientific purposes or to enhance the propagation or survival of the affected species, including, but not limited to, acts necessary for the establishment and maintenance of experimental populations pursuant to subsection (j) of this section; or

(B) any taking otherwise prohibited by section 1538(a) (1) (B) of this title if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

(2)(A) No permit may be issued by the Secretary authorizing any taking referred to in paragraph (1) (B) unless the applicant therefor submits to the Secretary a conservation plan that specifies -

(i) the impact which will likely result from such taking;

(ii) what steps the applicant will take to minimize and mitigate such impacts, and the funding that will be available to implement such steps;

(iii) what alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized; and

(iv) such other measures that the Secretary may require as being necessary or appropriate for purposes of the plan.

(B) If the Secretary finds, after opportunity for public comment, with respect to a permit application and the related conservation plan that -

(i) the taking will be incidental;

(ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;

(iii) the applicant will ensure that adequate funding for the plan will be provided;

(iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and

(v) the measures, if any, required under subparagraph (A) (iv) will be met; and he has received such other assurances as he may require that the plan will be implemented, the Secretary shall issue the permit. The permit shall contain such terms and conditions as the Secretary deems necessary or appropriate to carry out the purposes of this paragraph, including, but not limited to, such reporting requirements as the Secretary deems necessary for determining whether such terms and conditions are being complied with.

(C) The Secretary shall revoke a permit issued under this paragraph if he finds that the permittee is not complying with the terms and conditions of the permit.

(b) Hardship exemptions

(1) If any person enters into a contract with respect to a species of fish or wildlife or plant before the date of the publication in the Federal Register of notice of consideration of that species as an endangered species and the subsequent listing of that species as an endangered species pursuant to section 1533 of this title will cause undue economic

hardship to such person under the contract, the Secretary, in order to minimize such hardship, may exempt such person from the application of section 1538(a) of this title to the extent the Secretary deems appropriate if such person applies to him for such exemption and includes with such application such information as the Secretary may require to prove such hardship; except that

(A) no such exemption shall be for a duration of more than one year from the date of publication in the Federal Register of notice of consideration of the species concerned, or shall apply to a quantity of fish or wildlife or plants in excess of that specified by the Secretary;

(B) the one-year period for those species of fish or wildlife listed by the Secretary as endangered prior to December 28, 1973 shall expire in accordance with the terms of section 668cc-3 of this title; and

(C) no such exemption may be granted for the importation or exportation of a specimen listed in Appendix I of the Convention which is to be used in a commercial activity.

(2) As used in this subsection, the term "undue economic hardship" shall include, but not be limited to:

(A) substantial economic loss resulting from inability caused by this chapter to perform contracts with respect to species of fish and wildlife entered into prior to the date of publication in the Federal Register of a notice of consideration of such species as an endangered species;

(B) substantial economic loss to persons who, for the year prior to the notice of consideration of such species as an endangered species, derived a substantial portion of their income from the lawful taking of any listed species, which taking would be made unlawful under this chapter; or

(C) curtailment of subsistence taking made unlawful under this chapter by persons (i) not reasonably able to secure other sources of subsistence; and (ii) dependent to a substantial extent upon hunting and fishing for subsistence; and (iii) who must engage in such curtailed taking for subsistence purposes.

(3) The Secretary may make further requirements for a showing of undue economic hardship as he deems fit. Exceptions granted under this section may be limited by the Secretary in his discretion as to time, area, or other factor of applicability.

(c) Notice and review

The Secretary shall publish notice in the Federal Register of each application for an exemption or permit which is made under this section. Each notice shall invite the

submission from interested parties, within thirty days after the date of the notice, of written data, views, or arguments with respect to the application; except that such thirty-day period may be waived by the Secretary in an emergency situation where the health or life of an endangered animal is threatened and no reasonable alternative is available to the applicant, but notice of any such waiver shall be published by the Secretary in the Federal Register within ten days following the issuance of the exemption or permit. Information received by the Secretary as a part of any application shall be available to the public as a matter of public record at every stage of the proceeding.

(d) Permit and exemption policy

The Secretary may grant exceptions under subsections (a) (1) (A) and (b) of this section only if he finds and publishes his finding in the Federal Register that (1) such exceptions were applied for in good faith, (2) if granted and exercised will not operate to the disadvantage of such endangered species, and (3) will be consistent with the purposes and policy set forth in section 1531 of this title.

(e) Alaska natives [omitted]

(f) Pre-Act endangered species parts exemption; application and certification; regulation; validity of sales contract; separability of provisions; renewal of exemption; expiration of renewal certification
[omitted]

(g) Burden of proof

In connection with any action alleging a violation of section 1538 of this title, any person claiming the benefit of any exemption or permit under this chapter shall have the burden of proving that the exemption or permit is applicable, has been granted, and was valid and in force at the time of the alleged violation.

(h) Certain antique articles; importation; port designation; application for return of articles [omitted]

(i) Noncommercial transshipments [omitted]

(j) Experimental populations

(1) For purposes of this subsection, the term "experimental population" means any population (including any offspring arising solely therefrom) authorized by the Secretary for release under paragraph (2), but only when, and at such times as, the population is wholly separate geographically from nonexperimental populations of the same species.

(2)(A) The Secretary may authorize the release (and the related transportation) of any population (including eggs, propagules, or individuals) of an endangered species or a threatened species outside the current range of such species if the Secretary determines that such release will further the conservation of such species.

(B) Before authorizing the release of any population under subparagraph (A), the Secretary shall by regulation identify the population and determine, on the basis of the best available information, whether or not such population is essential to the continued existence of an endangered species or a threatened species.

(C) For the purposes of this chapter, each member of an experimental population shall be treated as a threatened species; except that -

(i) solely for purposes of section 1536 of this title (other than subsection (a) (1) thereof), an experimental population determined under subparagraph (B) to be not essential to the continued existence of a species shall be treated, except when it occurs in an area within the National Wildlife Refuge System or the National Park System, as a species proposed to be listed under section 1533 of this title; and

(ii) critical habitat shall not be designated under this chapter for any experimental population determined under subparagraph (B) to be not essential to the continued existence of a species.

(3) The Secretary, with respect to populations of endangered species or threatened species that the Secretary authorized, before October 13, 1982, for release in geographical areas separate from the other populations of such species, shall determine by regulation which of such populations are an experimental population for the purposes of this subsection and whether or not each is essential to the continued existence of an endangered species or a threatened species.

Section 1540. Penalties and enforcement [ESA Section11]

(a) Civil penalties

(1) Any person who knowingly violates, and any person engaged in business as an importer or exporter of fish, wildlife, or plants who violates, any provision of this chapter, or any provision of any permit or certificate issued hereunder, or of any regulation issued in order to implement subsection (a)(1)(A), (B), (C), (D), (E), or (F), (a)(2)(A), (B), (C), or (D), (c), (d) (other than regulation relating to recordkeeping or filing of reports), (f) or (g) of section 1538 of this title, may be assessed a civil penalty by the Secretary of not more than $25,000 for each violation. Any person who knowingly violates, and any person engaged in business as an importer or exporter of fish, wildlife,

or plants who violates, any provision of any other regulation issued under this chapter may be assessed a civil penalty by the Secretary of not more than $12,000 for each such violation. Any person who otherwise violates any provision of this chapter, or any regulation, permit, or certificate issued hereunder, may be assessed a civil penalty by the Secretary of not more than $500 for each such violation. No penalty may be assessed under this subsection unless such person is given notice and opportunity for a hearing with respect to such violation. Each violation shall be a separate offense. Any such civil penalty may be remitted or mitigated by the Secretary. Upon any failure to pay a penalty assessed under this subsection, the Secretary may request the Attorney General to institute a civil action in a district court of the United States for any district in which such person is found, resides, or transacts business to collect the penalty and such court shall have jurisdiction to hear and decide any such action. The court shall hear such action on the record made before the Secretary and shall sustain his action if it is supported by substantial evidence on the record considered as a whole.

(2) Hearings held during proceedings for the assessment of civil penalties authorized by paragraph (1) of this subsection shall be conducted in accordance with section 554 of Title 5. The Secretary may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and administer oaths. Witnesses summoned shall be paid the same fees and mileage that are paid to witnesses in the courts of the United States. In case of contumacy or refusal to obey a subpoena served upon any person pursuant to this paragraph, the district court of the United States for any district in which such person is found or resides or transacts business, upon application by the United States and after notice to such person, shall have jurisdiction to issue an order requiring such person to appear and give testimony before the Secretary or to appear and produce documents before the Secretary, or both, and any failure to obey such order of the court may be punished by such court as a contempt thereof.

(3) Notwithstanding any other provision of this chapter, no civil penalty shall be imposed if it can be shown by a preponderance of the evidence that the defendant committed an act based on a good faith belief that he was acting to protect himself or herself, a member of his or her family, or any other individual from bodily harm, from any endangered or threatened species.

(b) Criminal violations

(1) Any person who knowingly violates any provision of this chapter, of any permit or certificate issued hereunder, or of any regulation issued in order to implement subsection (a)(1)(A), (B), (C), (D), (E), or (F); (a)(2)(A), (B), (C), or (D), (c), (d) (other than a regulation relating to recordkeeping, or filing of reports), (f), or (g) of section 1538 of this title shall, upon conviction, be fined not more than $50,000 or imprisoned for not more than one year, or both. Any person who knowingly violates any provision of any other regulation issued under this chapter shall, upon conviction, be fined not more than $25,000 or imprisoned for not more than six months, or both.

(2) The head of any Federal agency which has issued a lease, license, permit, or other agreement authorizing a person to import or export fish, wildlife, or plants, or to operate a quarantine station for imported wildlife, or authorizing the use of Federal lands, including grazing of domestic livestock, to any person who is convicted of a criminal violation of this chapter or any regulation, permit, or certificate issued hereunder may immediately modify, suspend, or revoke each lease, license, permit, or other agreement. The Secretary shall also suspend for a period of up to one year, or cancel, any Federal hunting or fishing permits or stamps issued to any person who is convicted of a criminal violation of any provision of this chapter or any regulation, permit, or certificate issued hereunder. The United States shall not be liable for the payments of any compensation, reimbursement, or damages in connection with the modification, suspension, or revocation of any leases, licenses, permits, stamps, or other agreements pursuant to this section.

(3) Notwithstanding any other provision of this chapter, it shall be a defense to prosecution under this subsection if the defendant committed the offense based on a good faith belief that he was acting to protect himself or herself, a member of his or her family, or any other individual, from bodily harm from any endangered or threatened species.

(c) District court jurisdiction

The several district courts of the United States, including the courts enumerated in section 460 of Title 28, shall have jurisdiction over any actions arising under this chapter. For the purpose of this chapter, American Samoa shall be included within the judicial district of the District Court of the United States for the District of Hawaii.

(d) Rewards and certain incidental expenses

The Secretary or the Secretary of the Treasury shall pay, from sums received as penalties, fines, or forfeitures of property for any violation of this chapter or any regulation issued hereunder (1) a reward to any person who furnishes information which leads to an arrest, a criminal conviction, civil penalty assessment, or forfeiture of property for any violation of this chapter or any regulation issued hereunder, and (2) the reasonable and necessary costs incurred by any person in providing temporary care for any fish, wildlife, or plant pending the disposition of any civil or criminal proceeding alleging a violation of this chapter with respect to that fish, wildlife, or plant. The amount of the reward, if any, is to be designated by the Secretary or the Secretary of the Treasury, as appropriate. Any officer or employee of the United States or any State or local government who furnishes information or renders service in the performance of his official duties is ineligible for payment under this subsection. Whenever the balance of sums received under this section and section 3375(d) of this title, as penalties or fines, or from forfeitures of property, exceed $500,000, the Secretary of the Treasury shall deposit an amount equal to such

excess balance in the cooperative endangered species conservation fund established under section 1535(i) of this title.

(e) Enforcement

(1) The provisions of this chapter and any regulations or permits issued pursuant thereto shall be enforced by the Secretary, the Secretary of the Treasury, or the Secretary of the Department in which the Coast Guard is operating, or all such Secretaries. Each such Secretary may utilize by agreement, with or without reimbursement, the personnel, services, and facilities of any other Federal agency or any State agency for purposes of enforcing this chapter.

(2) The judges of the district courts of the United States and the United States magistrates may, within their respective jurisdictions, upon proper oath or affirmation showing probable cause, issue such warrants or other process as may be required for enforcement of this chapter and any regulation issued thereunder.

(3) Any person authorized by the Secretary, the Secretary of the Treasury, or the Secretary of the Department in which the Coast Guard is operating, to enforce this chapter may detain for inspection and inspect any package, crate, or other container, including its contents, and all accompanying documents, upon importation or exportation. Such person may make arrests without a warrant for any violation of this chapter if he has reasonable grounds to believe that the person to be arrested is committing the violation in his presence or view, and may execute and serve any arrest warrant, search warrant, or other warrant or civil or criminal process issued by any officer or court of competent jurisdiction for enforcement of this chapter. Such person so authorized may search and seize, with or without a warrant, as authorized by law. Any fish, wildlife, property, or item so seized shall be held by any person authorized by the Secretary, the Secretary of the Treasury, or the Secretary of the Department in which the Coast Guard is operating pending disposition of civil or criminal proceedings, or the institution of an action in rem for forfeiture of such fish, wildlife, property, or item pursuant to paragraph (4) of this subsection; except that the Secretary may, in lieu of holding such fish, wildlife, property, or item, permit the owner or consignee to post a bond or other surety satisfactory to the Secretary, but upon forfeiture of any such property to the United States, or the abandonment or waiver of any claim to any such property, it shall be disposed of (other than by sale to the general public) by the Secretary in such a manner, consistent with the purposes of this chapter, as the Secretary shall by regulation prescribe.

(4)(A) All fish or wildlife or plants taken, possessed, sold, purchased, offered for sale or purchase, transported, delivered, received, carried, shipped, exported, or imported contrary to the provisions of this chapter, any regulation made pursuant thereto, or any permit or certificate issued hereunder shall be subject to forfeiture to the United States.

(B) All guns, traps, nets, and other equipment, vessels, vehicles, aircraft, and other means of transportation used to aid the taking, possessing, selling, purchasing, offering for sale or purchase, transporting, delivering, receiving, carrying, shipping, exporting, or importing of any fish or wildlife or plants in violation of this chapter, any regulation made pursuant thereto, or any permit or certificate issued thereunder shall be subject to forfeiture to the United States upon conviction of a criminal violation pursuant to subsection (b)(1) of this section.

(5) All provisions of law relating to the seizure, forfeiture, and condemnation of a vessel for violation of the customs laws, the disposition of such vessel or the proceeds from the sale thereof, and the remission or mitigation of such forfeiture, shall apply to the seizures and forfeitures incurred, or alleged to have been incurred, under the provisions of this chapter, insofar as such provisions of law are applicable and not inconsistent with the provisions of this chapter; except that all powers, rights, and duties conferred or imposed by the customs laws upon any officer or employee of the Treasury Department shall, for the purposes of this chapter, be exercised or performed by the Secretary or by such persons as he may designate.

(6) The Attorney General of the United States may seek to enjoin any person who is alleged to be in violation of any provision of this chapter or regulation issued under authority thereof.

(f) Regulations

The Secretary, the Secretary of the Treasury, and the Secretary of the Department in which the Coast Guard is operating, are authorized to promulgate such regulations as may be appropriate to enforce this chapter, and charge reasonable fees for expenses to the Government connected with permits or certificates authorized by this chapter including processing applications and reasonable inspections, and with the transfer, board, handling, or storage of fish or wildlife or plants and evidentiary items seized and forfeited under this chapter. All such fees collected pursuant to this subsection shall be deposited in the Treasury to the credit of the appropriation which is current and chargeable for the cost of furnishing the services. Appropriated funds may be expended pending reimbursement from parties in interest.

(g) Citizen suits

(1) Except as provided in paragraph (2) of this subsection any person may commence a civil suit on his own behalf -

(A) to enjoin any person, including the United States and any other governmental instrumentality or agency (to the extent permitted by the eleventh amendment to the Constitution), who is alleged to be in violation of any provision of this chapter or regulation issued under the authority thereof; or

(B) to compel the Secretary to apply, pursuant to section 1535(g) (2) (B) (ii) of this title, the prohibitions set forth in or authorized pursuant to section 1533(d) or 1538(a) (1) (B) of this title with respect to the taking of any resident endangered species or threatened species within any State; or

(C) against the Secretary where there is alleged a failure of the Secretary to perform any act or duty under section 1533 of this title which is not discretionary with the Secretary.

The district courts shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce any such provision or regulation, or to order the Secretary to perform such act or duty, as the case may be. In any civil suit commenced under subparagraph (B) the district court shall compel the Secretary to apply the prohibition sought if the court finds that the allegation that an emergency exists is supported by substantial evidence.

(2)(A) No action may be commenced under subparagraph (1)(A) of this section-

(i) prior to sixty days after written notice of the violation has been given to the Secretary, and to any alleged violator of any such provision or regulation;

(ii) if the Secretary has commenced action to impose a penalty pursuant to subsection (a) of this section; or

(iii) if the United States has commenced and is diligently prosecuting a criminal action in a court of the United States or a State to redress a violation of any such provision or regulation.

(B) No action may be commenced under subparagraph (1)(B) of this section -

(i) prior to sixty days after written notice has been given to the Secretary setting forth the reasons why an emergency is thought to exist with respect to an endangered species or a threatened species in the State concerned; or

(ii) if the Secretary has commenced and is diligently prosecuting action under section 1535(g)(2)(B)(ii) of this title to determine whether any such emergency exists.

(C) No action may be commenced under subparagraph (1) (C) of this section prior to sixty days after written notice has been given to the Secretary; except that such action may be brought immediately after such notification in the case of an action under this section respecting an emergency posing a significant risk to the well-being of any species of fish or wildlife or plants.

(3)(A) Any suit under this subsection may be brought in the judicial district in which the violation occurs.

(B) In any such suit under this subsection in which the United States is not a party, the Attorney General, at the request of the Secretary, may intervene on behalf of the United States as a matter of right.

(4) The court, in issuing any final order in any suit brought pursuant to paragraph (1) of this subsection, may award costs of litigation (including reasonable attorney and expert witness fees) to any party, whenever the court determines such award is appropriate.

(5) The injunctive relief provided by this subsection shall not restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any standard or limitation or to seek any other relief (including relief against the Secretary or a State agency).

(h) Coordination with other laws

The Secretary of Agriculture and the Secretary shall provide for appropriate coordination of the administration of this chapter with the administration of the animal quarantine laws (21 U.S.C. 101-105, 111-135b, and 612-614) and section 306 of the Tariff Act of 1930 (19 U.S.C. 1306). Nothing in this chapter or any amendment made by this Act shall be construed as superseding or limiting in any manner the functions of the Secretary of Agriculture under any other law relating to prohibited or restricted importations or possession of animals and other articles and no proceeding or determination under this chapter shall preclude any proceeding or be considered determinative of any issue of fact or law in any proceeding under any Act administered by the Secretary of Agriculture. Nothing in this chapter shall be construed as superseding or limiting in any manner the functions and responsibilities of the Secretary of the Treasury under the Tariff Act of 1930 [19 U.S.C.A. Section 1202 et seq.], including, without limitation, section 527 of that Act (19 U.S.C. 1527), relating to the importation of wildlife taken, killed, possessed, or exported to the United States in violation of the laws or regulations of a foreign country.

APPENDIX B

2nd Session, 35th Parliament
45 Elizabeth II, 1996-97
The House of Commons of Canada

BILL C-65

An Act respecting the protection of wildlife species in Canada from extirpation or extinction

Preamble Recognizing that

Canada's natural heritage is an integral part of our national identity and history, wildlife, in all its forms, has value in and of itself and is valued by Canadians for aesthetic, cultural, spiritual, recreational, educational, historical, economic, medical, ecological and scientific reasons,

Canadian wildlife species and ecosystems are also part of the world's heritage and the Government of Canada has ratified the United Nations Convention on the Conservation of Biological Diversity,

providing legal protection for wildlife species at risk will in part meet Canada's commitments under that Convention,

the Government of Canada is committed to conserving biological diversity and to the principle that, if there are threats of serious or irreversible damage to wildlife species, cost effective measures to prevent the reduction or loss of the species should not be postponed for a lack of scientific certainty,

responsibility for the conservation of wildlife in Canada is shared among the various levels of government in this country and it is important to work together in this regard,

all Canadians have a role to play in the conservation of wildlife in this country, including the prevention of wildlife species from becoming extirpated or extinct,

the role of the aboriginal peoples of Canada in the conservation of wildlife in this country is especially important, and

knowledge of wildlife species and ecosystems is critical to their conservation,

Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

SHORT TITLE

Short title

1. This Act may be cited as the *Canada Endangered Species Protection Act.*

INTERPRETATION

Definitions

2. (1) The definitions in this subsection apply in this Act.

``alternative measures"

``alternative measures" means measures, other than judicial proceedings, used to deal with a person alleged to have committed an offence.

``aquatic species"

``aquatic species" means a wildlife species that is a fish, as defined in section 2 of the *Fisheries Act*, or a marine plant, as defined in section 47 of that Act.

``Attorney General"

``Attorney General" means the Attorney General of Canada and, for the purposes of sections 87 to 93, it includes the delegate of the Attorney General of Canada.

``COSEWIC"

``COSEWIC" means the Committee on the Status of Endangered Wildlife in Canada established by section 13.

``Council"

``Council" means the Canadian Endangered Species Conservation Council established by section 12.

``critical habitat"

``critical habitat" means habitat that is identified as critical to the survival of a wildlife species in a status report or a decision under section 24.

``emergency order"

``emergency order" means an order made under section 34.

``endangered species"

``endangered species" means a wildlife species that is facing imminent extirpation or extinction.

``endangered species protection action"

``endangered species protection action" means an action under section 60.

``extirpated species"

``extirpated species" means a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.

``federal land"

``federal land" means

(a) land that belongs to Her Majesty in right of Canada, or that Her Majesty in right of Canada has the power to dispose of, and all waters on and airspace above that land;

(b) the following land and areas, namely,

(i) the internal waters of Canada within the meaning of the *Territorial Sea and Fishing Zones Act*, including the seabed and subsoil below and the airspace above those waters, and

(ii) the territorial sea of Canada as determined in accordance with the *Territorial Sea and Fishing Zones Act*, including the seabed and subsoil below and the airspace above that sea; and

(c) reserves and any other lands that are set apart for the use and benefit of a band under the *Indian Act*, and all waters on and airspace above those reserves and lands.

``individual"

``individual" means an individual of a wildlife species, whether living or dead, at any developmental stage and includes eggs, sperm, pollen and spores.

``listed"

``listed" means listed on the List of Wildlife Species at Risk established under section 30.

``Minister"

``Minister" means the Minister of the Environment.

``offence"

``offence" means an offence under this Act.

``provincial minister"

``provincial minister'' means the minister of the government of a province who is responsible for wildlife species in that province.

``public registry''

``public registry'' means the registry established under section 9.

``recovery plan''

``recovery plan'' means a plan prepared under section 38.

"residence"

``residence'' means a specific dwelling place, such as a den, nest or other similar area habitually occupied by an individual during all or part of its life cycle.

``responsible minister''

``responsible minister'' means

(a) the Minister of Canadian Heritage with respect to individuals in
or on federal land under the authority of that Minister;

(b) the Minister of Fisheries and Oceans with respect to aquatic species, other than individuals mentioned in paragraph (a); and

(c) the Minister of the Environment with respect to all other individuals.

``species at risk''

``species at risk'' means an extirpated, endangered, threatened or vulnerable species.

``status report''

``status report'' means a report, in accordance with the requirements of subsection 20(2), containing a summary of the best available scientific information or traditional or community knowledge on the status of a wildlife species.

``threatened species''

``threatened species'' means a wildlife species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction.

``vulnerable species''

``vulnerable species'' means a wildlife species that is of special concern because it is particularly sensitive to human activities or natural events, but it does not include an endangered or threatened species.

``wildlife species"

``wildlife species" means a species, subspecies or geographically distinct population of animal, plant or other organism that is wild by nature and

(a) is native to Canada; or

(b) extended its range into Canada without human intervention and has been present in Canada for at least 50 years.

For the purposes of this definition, a species, subspecies or geographically distinct population is, in the absence of evidence to the contrary, presumed to have bee present in Canada for at least 50 years.

Aboriginal and treaty rights

(2) For greater certainty, nothing in this Act is to be construed so as to abrogate or derogate from any existing aboriginal or treaty rights of the aboriginal peoples of Canada under section 35 of the *Constitution Act, 1982*.

APPLICATION

Application to wildlife species and habitats

3. (1) Subject to subsections (2) and (3), this Act applies in respect of wildlife species and their habitats, including

(a) aquatic species and their habitats; and

(b) species of migratory birds and their habitats that are protected by the Migratory Birds Convention Act, 1994.

Application in provinces

(2) Sections 30 to 32, regulations under section 42 and emergency orders apply in a province, other than the Yukon Territory or the Northwest Territories, in respect of wildlife species and their habitats, other than those mentioned in paragraphs (1)(a) and (b), only in so far as individuals of those species and their habitats are found on federal land.

Non-application of provisions in territories

(3) The Governor in Council, on the recommendation of the Minister, may make an order providing that a provision of this Act does not apply in respect of a wildlife species, other than one mentioned in paragraph (1)(a) or (b), in so far as individuals of that species are found in the Yukon Territory or the Northwest Territories, but outside federal land under the authority of the Minister of Canadian

Heritage. Despite the order, the provision continues to apply to Her Majesty in right of Canada.

Agreement

(4) Before recommending the order to the Governor in Council, the Minister and the minister of the territorial government who is responsible for wildlife species must agree in writing that an equivalent provision is in force by or under the laws of the territory.

Consultation

(5) Before making the agreement, the Minister must consult any wildlife management board established under aboriginal land claims legislation if the Minister considers that the order will directly affect the board.

Publication of agreement

(6) The Minister must make the agreement public by including it in the public registry.

Termination of agreement and repeal of order

(7) The agreement may be terminated by either party giving to the other at least six months notice of termination, in which case the Governor in Council, on the recommendation of the Minister, must repeal the order.

Report to Parliament

(8) The Minister must include in the annual report required by section 101 a report on the administration of subsections (3) to (7).

HER MAJESTY

Binding on Her Majesty

4. (1) This Act is binding on Her Majesty in right of Canada or a province, but it applies to Crown corporations, as defined in subsection 83(1) of the Financial Administration Act, only in respect of

(a) aquatic species and their habitats;

(b) species of migratory birds and their habitats that are protected by the Migratory Birds Convention Act, 1994; and

(c) other wildlife species and their habitats to the extent provided in the regulations.

Regulations

(2) The Governor in Council, on the recommendation of the Minister, may make regulations providing for the application of this Act to Crown corporations in respect of wildlife species and their habitats mentioned in paragraph (1)(c).

PURPOSES

Prevention and recovery

5. The purposes of this Act are to prevent wildlife species from being extirpated or becoming extinct and to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity.

ADMINISTRATION

Responsibility for administration

6. (1) The Minister is responsible for the administration of this Act, except in so far as this Act gives responsibility to another responsible minister.

Delegation

(2) A responsible minister may authorize any person or governmental body to exercise or perform any of that minister's powers or functions under this Act relating to its enforcement or to the issuance of permits.

Agreements with provincial governments

7. (1) A responsible minister may

(a) with the approval of the Governor in Council, enter into an agreement with one or more provincial governments with respect to the administration of any provision of this Act for which that minister has responsibility, including the preparation and implementation of recovery plans; and

(b) agree to amendments of the agreement, subject to any terms and conditions that the Governor in Council may specify in the approval.

Conservation agreements

(2) A responsible minister may enter into an agreement for the conservation of a species at risk, including the protection of their habitats. The agreement may be with one or more governments of provinces or countries, or organizations or persons. If there is another responsible minister with respect to the species, the agreement may only be made with the concurrence of that minister.

Pre-publication

(3) At least 60 days before an agreement is concluded under this section, the responsible minister must make the proposed text of it public by including it in the public registry and by any other means that the responsible minister considers appropriate.

Publication and report

(4) Once the agreement is concluded, the responsible minister must make it public by including it in the public registry.

Funding agreements

8. (1) The Minister may, with the approval of the Governor in Council, enter into an agreement with the government of a province, a municipal authority or organization or any other person to provide for the payment of contributions to the costs of programs and measures for the conservation of wildlife species.

Provisions to be included

(2) The agreement must

(a) specify the contribution to the cost of the program or measure that is payable by any party and the time or times at which any amounts under the agreement will be paid;

(b) specify the authority that will be responsible for undertaking, operating and maintaining the program or measure or any part of it;

(c) specify the proportions of any revenue from the program or measure that is payable to the parties; and

(d) specify the terms and conditions governing the operation and maintenance of the program or measure.

PUBLIC ACCESS

Public registry

9. The Minister must establish a public registry for the purpose of facilitating access to documents relating to matters under this Act.

Form and manner of public registry

10. The Minister may determine the form of the public registry, how it is to be kept and how access to it is to be provided.

Protection from proceedings

11. Despite any other Act of Parliament, no civil or criminal proceedings may be brought against any of the following persons for the full or partial disclosure in good faith of any notice or other document through the public registry or any consequences of its disclosure:

(a) Her Majesty in right of Canada; and

(b) the Minister or any person acting on behalf of or under the direction of the Minister.

CANADIAN ENDANGERED SPECIES CONSERVATION COUNCIL

Establishment

12. (1) The Canadian Endangered Species Conservation Council is established, to be composed of the responsible ministers and any provincial ministers who agree to attend the meetings of the Council.

Co-chairpersons

(2) The Council is to be chaired jointly by the Minister and a provincial minister chosen by a majority of the provincial ministers who are members of the Council.

Responsibilities

(3) The Council is responsible for providing general direction on the activities of COSEWIC and on the development and implementation of recovery plans.

WILDLIFE SPECIES LISTING PROCESS

Committee on the Status of Endangered Wildlife in Canada

Establishment

13. (1) The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is established to carry out its functions under this Act solely on the basis of the best available information on the biological status of species at risk.

Composition

(2) COSEWIC is to be composed of not more than nine members appointed by the Minister after consulting the Council.

Functions

(3) In addition to designating species at risk, COSEWIC has the following functions:

(a) developing scientific criteria for assessing the status of wildlife species and for classifying them and recommending the criteria to the Minister;

(b) ranking the urgency of assessing the status of particular wildlife species and classifying them; and

(c) providing advice to the Minister and any other functions that the Minister, in consultation with the Council, may assign.

Administrative support

(4) COSEWIC may receive administrative support from the Minister to carry out its functions.

Qualifications of members

14. (1) The members of COSEWIC must have expertise drawn from a discipline such as conservation biology, population dynamics,

taxonomy, systematics, genetics or from traditional or community knowledge of the protection of species at risk.

Representative nature

(2) In appointing the members, the Minister must consider the importance of maintaining a membership that is broadly representative of all regions of Canada. However, the members are not to be appointed as representatives of particular regions or interest groups.

Term of appointment

(3) The members are to be appointed to hold office during pleasure for a renewable term of not more than three years.

Not part of the public service of Canada

(4) Appointment as a member of COSEWIC is not an appointment to the public service of Canada.

Remuneration and expenses

(5) The members are to be paid remuneration and expenses in amounts that the Minister may set.

Meetings

15. COSEWIC must meet at least once every six months.

Subcommittees

16. COSEWIC may establish advisory and other subcommittees to advise or assist it or to exercise or perform any of its powers or functions.

Rules

17. COSEWIC may make rules respecting the holding of meetings and the general conduct of its activities, including

(a) the selection of persons to chair its meetings; and

(b) the meetings and activities of its subcommittees.

Designation of Species at Risk

Designation

18. COSEWIC must designate wildlife species that it considers to be at risk and classify them as

(a) extinct;

(b) extirpated;

(c) endangered;

(d) threatened; or

(e) vulnerable.

Applications

19. (1) Any person may apply to COSEWIC for the designation or reclassification of a wildlife species or the revocation of its designation.

Information to be included

(2) The application must include relevant information about the biological status of the species and, if possible, a status report.

Examination of applications

(3) Within 90 days after receiving the application, COSEWIC must examine it and inform the applicant in writing of what it has decided to do about the application and the reasons for its decision.

Status reports

20. (1) Each decision of COSEWIC about the designation or classification of a wildlife species must be based on a status report on the species that COSEWIC either has had prepared or has received with an application.

Form and content of status reports

(2) The Minister may, on the recommendation of COSEWIC, make regulations establishing the form and content of the status reports, but the reports must

(a) include an assessment of the past and present distribution and population of the wildlife species concerned;

(b) identify the habitat that is important or critical to the species; and

(c) identify existing and potential threats to the species and its critical habitat and evaluate how serious they are.

Decision with reasons

21. (1) COSEWIC must make a decision about the designation or classification of a wildlife species within one year after it receives a status report on the species and the decision must be supported by reasons.

Notification of applicant

(2) If the decision results from an application, COSEWIC must notify the applicant of the decision and the reasons.

Decision not to designate

(3) COSEWIC must include the wildlife species on a list, to be called the ``List of Non-designated Species", if it decides that the species should not be designated, either because it is not at risk or because there is not enough information to determine whether it is at risk.

Public registry

(4) The List of Non-designated Species must be included in the public registry.

Emergency Designations and Reclassifications

Emergency designation or reclassification

22. COSEWIC may, on an emergency basis, designate or reclassify a wildlife species as threatened or endangered before receiving a status report if it has information indicating that there is an imminent threat to the survival of the species.

Application for emergency designation or reclassification

23. (1) Any person may apply to COSEWIC for an emergency designation or reclassification of a wildlife species as threatened or endangered. The application must include relevant information indicating that there is an imminent threat to the survival of the species.

Examination of application

(2) Within 30 days after receiving the application, COSEWIC must examine it and inform the applicant in writing of what it has decided to do about the application and the reasons for its decision.

Decision and reasons

24. If COSEWIC decides to designate or reclassify the wildlife species, it must give reasons for its decision and identify the imminent threat to the survival of the species. If loss of habitat is an imminent threat, COSEWIC must also identify the habitat that is critical to the survival of the species.

Status report and final decision

25. Within 18 months after making an emergency designation or reclassification, COSEWIC must have a status report on the species prepared and make a final decision on whether it should be designated or reclassified.

Publication

Documents in public registry

26. The following documents must be included in the public registry:

(a) COSEWIC's criteria for the designation and classification of wildlife species;

(b) the status reports on wildlife species; and

(c) COSEWIC's decisions about the designation and classification of wildlife species and the reasons for the decisions.

Reviews and Reports

Review of designations and classifications

27. COSEWIC must review the designation and classification of each species at risk at least once every 10 years, or more frequently if it has reason to believe that the status of the species has changed significantly.

Reports to Council

28. When COSEWIC makes a decision about the designation or classification of a wildlife species, COSEWIC must report the decision to the members of the Council.

Annual reports

29. As soon as possible after the end of each year, COSEWIC must report to the Council on its activities during that year.

List of Wildlife Species at Risk

Regulations

30. (1) The Governor in Council, on the recommendation of the Minister, may make regulations establishing and amending the List of Wildlife Species at Risk based on COSEWIC's designations and classifications of wildlife species.

Notice of response to designation, etc.

(2) Within 90 days after COSEWIC designates a wildlife species, changes its classification or revokes a designation, the Governor in Council must give notice in the public registry of whether the Governor in Council intends to amend the List accordingly.

Listing at request of provincial minister

(3) The Governor in Council, on the recommendation of the Minister, may also include a wildlife species on the List if a provincial minister designates it as a species at risk, asks that it be listed and agrees to participate in the preparation of a recovery plan for the species.

Public registry

(4) The List must be included in the public registry.

MEASURES TO PROTECT LISTED SPECIES

Prohibitions

Killing, harming, etc., listed species

31. (1) No person shall kill, harm, harass, capture or take an individual of a listed endangered or threatened species.

Possession, collection, etc.

(2) No person shall possess, collect, buy, sell or trade an individual of a listed endangered or threatened species, or any part or derivative of one.

Damage or destruction of residence

32. No person shall damage or destroy the residence of an individual of a listed endangered or threatened species.

Regulations protecting certain crossboundary species

33. The Minister may make regulations prohibiting any person from

(a) wilfully killing, harming, harassing, capturing or taking an individual of a wildlife animal species, other than one mentioned in paragraph 3(1)(a) or (b), if COSEWIC

(i) has determined that the species migrates across an international boundary of Canada or has a range extending across such a boundary, and

(ii) has designated the species as an endangered or threatened species; or

(b) knowingly engaging in activities that damage or destroy the residence of the individual.

Before making the regulations, the Minister must consult the provincial minister of each province in which the regulations will apply.

Emergency Orders

Order based on emergency designation or classification

34. (1) The responsible minister may make an emergency order providing for the protection of a wildlife species if COSEWIC designates or reclassifies the species as endangered or threatened on an emergency basis. The order may include provisions regulating or prohibiting activities that may adversely affect the species or the residences of its individuals.

Order based on inadequate recovery plan, etc.

(2) The responsible minister may make an emergency order providing for the protection of a wildlife species if the responsible minister determines that the recovery plan for the species no longer adequately protects it or that immediate action is required to protect the species. The order may include provisions regulating or prohibiting activities that may adversely affect the species or the residences of its individuals.

Notification of Minister

(3) If the responsible minister is the Minister of Canadian Heritage or the Minister of Fisheries and Oceans, he or she must

(a) notify the Minister of any decision (including the reasons) not to make an order under subsection (1) in response to an emergency designation or reclassification; and

(b) notify the Minister before making an order under subsection (2).

Provisions for the protection of habitat

(4) An emergency order must include provisions regulating or prohibiting activities that may adversely affect the critical habitat of the species if the responsible minister, based on the advice of COSEWIC, determines that there is an imminent threat to that habitat.

Repeal of subsection (1) orders

(5) The responsible minister must repeal an emergency order made under subsection (1) when

(a) the responsible minister determines that adequate measures have been implemented in response to the emergency designation or reclassification; or

(b) the Governor in Council, on the recommendation of the Minister, decided that no change to the List of Wildlife Species at Risk is needed in response to the emergency designation or reclassification.

Repeal of subsection (2) orders

(6) The responsible minister must repeal an emergency order made under subsection (2) when he or she determines that, under the circumstances, adequate measures have been implemented or the order is no longer needed.

Non-application of the Statutory Instruments Act

35. Sections 3, 5 and 11 of the Statutory Instruments Act do not apply to emergency orders, but each order must be included in the public registry and published in the Canada Gazette within 23 days after it is made.

Application of Prohibitions

General exceptions

36. (1) Sections 31 and 32, regulations under section 33 or 42 and emergency orders do not apply to persons who are engaging in

(a) activities authorized by or under any other Act of Parliament for the protection of national security, safety or health, including animal and plant health;

(b) activities in accordance with regulatory or conservation measures for wildlife species under an aboriginal treaty, land claims agreement, self-government agreement or co-management agreement that deals with wildlife species; or

(c) activities authorized under section 46 or 47 by an agreement, permit, licence, order or similar document.

Authorization of activities under other Acts

(2) A power under an Act described in paragraph (1)(a) may be used to authorize an activity prohibited by or under section 31, 32, 33, 34 or 42 only if the person exercising the power

(a) determines that the activity is necessary for the protection of national security, safety or health, including animal and plant health; and

(b) respects the purposes of this Act to the greatest extent possible.

Exemptions for activities under recovery plans

(3) Sections 31 and 32 and regulations under section 33 do not apply to persons who are engaging in activities authorized by a recovery plan.

Possession exception

(4) The prohibition against possession in subsection 31(2) does not prevent a person from possessing an individual of a listed endangered or threatened species, or any part or derivative of one, if

(a) it was in their possession when the species was listed;

(b) they acquired it legally in another country and imported it legally into Canada;

(c) they acquired it by succession from someone who was entitled to possess it under this subsection; or

(d) they are, or are acting on behalf of, a museum, zoo, educational institution, scientific society or government and they acquired it from someone who entitled to possess it under this subsection.

Species listed at the request of a provincial minister

37. If a wildlife species is listed at the request of a provincial minister under subsection 30(3), then sections 31 and 32 and emergency orders apply in respect of that species and its habitat only in so far as individuals of that species and its habitat are found on federal land in the province of that minister.

Recovery and Management Plans

Preparation of recovery plans

38. (1) The responsible minister must prepare a recovery plan that describes the measures to be taken to protect each wildlife species that is listed as endangered, threatened or extirpated as a result of human activity and, if possible, provide for its recovery. If there is more than one responsible minister with respect to the species, they must prepare the recovery plan together.

Cooperation with other ministers and governments

(2) To the extent possible, the recovery plan must be prepared in cooperation with

(a) the provincial minister of each province in which the wildlife species is found;

(b) any minister of the Government of Canada who has authority over federal land or other areas on which the species is found; and

(c) the government of any other country in which the species is found.

Time limit

(3) The recovery plan must be completed within one year after listing, if the wildlife species is listed as endangered, and within two years after listing, if it is listed as threatened or extirpated.

Determination of feasibility

(4) The responsible minister, based on the advice of COSEWIC, must determine whether the recovery of the wildlife species is technically and biologically feasible and must give notice in the public registry of the determination and the reasons for it.

Contents of recovery plan if recovery feasible

(5) If the recovery of the wildlife species is technically and biologically feasible, the recovery plan must address the threats to the survival of the species identified by COSEWIC, including loss of habitat, and must include

(a) a description of the species and its needs, including an identification of its critical habitat;

(b) an identification of the threats to the survival of the species;

(c) achievable population and distribution objectives that will provide for the recovery of the species and a detailed description of the research and management activities needed to meet the objectives;

(d) an evaluation of the costs and benefits of each research and management activity and the likelihood of its success;

(e) a description of any broader ecosystem management and multi-species approaches that are feasible;

(f) methods to be used to monitor the recovery of the species and its long-term viability;

(g) a description of the measures needed to reduce or eliminate the threats to the survival of the species, including regulations needed to regulate or prohibit activities that will adversely affect the species or its critical habitat;

(h) a mechanism for reviewing and evaluating the effectiveness of the plan; and

(i) any other information or recovery measures that the responsible minister considers appropriate.

Principles to be considered

(6) In determining the content of the recovery plan, the responsible minister must consider the commitment of the Government of

Canada to conserving biological diversity and to the principle that, if there are threats of serious or irreversible damage to the wildlife species, cost effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty.

Contents of recovery plan if recovery not feasible

(7) If the recovery of the wildlife species is not technically or biologically feasible, the recovery plan must include recovery measures limited to the prohibition of activities that directly affect individuals of the species or their residences.

Consultation on recovery plans

39. The recovery plan must be prepared in consultation with

(a) any wildlife management board that is established under aboriginal land claims legislation and is affected by the plan; and

(b) other persons who the responsible minister considers are directly affected by, or interested in, the plan.

Publication of recovery plans

40. (1) Once the recovery plan is completed,

(a) it must be included in the public registry; and

(b) the responsible minister must publish a summary of the recovery plan in the Canada Gazette and invite interested persons to comment within 60 days on the plan and its implementation.

Implementation report

(2) Within 150 days after the summary is published in the Canada Gazette, the responsible minister must prepare and publish in the public registry a report on how, and within what time-frames, the Government of Canada intends to implement the measures contained in the plan.

National recovery planning agreement

41. (1) The Minister, in cooperation with the other responsible ministers, may enter into an agreement with the provincial ministers to establish a framework for national recovery planning, including the incorporation, with the approval of the Governor in

Council, of a not-for-profit corporation under the *Canada Corporations Act.*

Authority to procure incorporation, etc.

(2) A responsible minister may procure the incorporation of the not-for-profit corporation or be a member of the corporation.

Regulations

42. (1) A responsible minister may make regulations for the purpose of implementing measures included in recovery plans that he or she has prepared.

Incorporation by reference

(2) The regulations may incorporate by reference any legislation of a province, as amended from time to time, in so far as the regulations apply in that province. They may also incorporate by reference other documents as amended from time to time.

Use of powers under other Acts

43. For the purpose of implementing the recovery plan, the responsible minister may use any powers that he or she has under any other Act of Parliament.

Monitoring implementation of recovery plans

44. A responsible minister must monitor the implementation of each recovery plan that he or she has prepared and must assess and report on its implementation within five years after the plan is included in the public registry and in each subsequent five-year period. The reports must be included in the public registry.

Management plans for vulnerable species

45. (1) Within three years after a wildlife species is listed as vulnerable, the responsible minister must prepare a management plan for the species and its critical habitat. The plan may apply with respect to more than one wildlife species and must include any measures for the conservation of the species that the responsible minister considers appropriate.

Publication of management plans

(2) Once the management plan is completed, it must be included in the public registry.

Monitoring implementation of management plans

(3) The responsible minister must monitor the implementation of the management plan and must fully assess its implementation five years after the plan comes into effect.

Agreements and Permits

Powers of responsible minister

46. (1) The responsible minister may make an agreement with a person, or issue a permit to a person, authorizing them to engage in an activity affecting

(a) a listed endangered or threatened species or its critical habitat; or

(b) a wildlife species to which regulations under section 33 apply or its residence.

Preconditions

(2) Before making the agreement or issuing the permit, the responsible minister must be satisfied that

(a) all reasonable alternatives to the activity have been considered;

(b) all feasible measures will be taken to minimize the impact of the activity on the species or its habitat or residence; and

(c) the activity will not imperil the survival of the species.

Terms and conditions

(3) The agreement or permit may contain any terms and conditions governing the activity that the responsible minister considers necessary for protecting the species, minimizing the impact of the authorized activity on the species or providing for its recovery.

Review of agreements and permits

(4) The responsible minister must review the agreement or permit if an emergency order is made with respect to the wildlife species.

Regulations

(5) The Minister may make regulations respecting the issuance, renewal, revocation and suspension of agreements and permits.

Agreements and permits under other Acts

47. An agreement, permit, licence, order or other similar document authorizing a person to engage in an activity mentioned in subsection 46(1) and made or issued by the responsible minister under another Act of Parliament has the same effect as an agreement or permit under that subsection if, before making or issuing it, the responsible minister is satisfied of the matters mentioned in subsection 46(2).

Publication of agreements

48. Each agreement made under section 46 or in effect under section 47 must be included in the public registry.

Project Review

Notification of Minister

49. (1) A responsible authority, as defined in subsection 2(1) of the *Canadian Environmental Assessment Act,* must notify the Minister in writing of any project that

(a) is likely to affect a wildlife species, or its critical habitat, that is listed as vulnerable, threatened or endangered or, in the case of a project outside Canada, a wildlife species on the Red List of Threatened Animals or the Red List of Threatened Plants of the World Conservation Union; and

(b) is required to have an environmental assessment under that Act before the authority

(i) exercises a power or performs a duty or function in respect of the project, or

(ii) recommends that the Governor in Council take any measures for the purpose of enabling the project to be carried out in whole or in part. Required action by responsible authority

(2) The responsible authority must ensure that measures are taken to identify the effects of the project on the wildlife species and its critical habitat, to lessen the effects and to monitor them. The measures must be taken in a way that is consistent with the recovery plan for the species.

ENFORCEMENT MEASURES

Enforcement officers

50. (1) A responsible minister may designate any person or class of persons to act as enforcement officers for the purposes of this Act.

Designation of provincial government employees

(2) The responsible minister may not designate any person or class of persons employed by the government of a province unless that government agrees.

Certificate of designation

(3) An enforcement officer must be provided with a certificate of designation as an enforcement officer in a form approved by the responsible minister and, on entering any place under this Act, the officer must, if so requested, show the certificate to the occupant or person in charge of the place.

Powers of peace officers

(4) For the purposes of this Act, enforcement officers have all the powers of a peace officer, but the responsible minister may specify limits on those powers when designating any person or class of persons.

Exemptions for law enforcement activities

(5) For the purpose of investigations and other law enforcement activities under this Act, a responsible minister may, on any terms and conditions that he or she considers necessary, exempt from the application of any provision of this Act, the regulations or an emergency order

(a) enforcement officers that the responsible minister has designated and who are carrying out duties or functions under this Act; and

(b) persons acting under their direction and control.

Obstruction

(6) When an enforcement officer is carrying out duties or functions under this Act, no person shall

(a) knowingly make any false or misleading statement either orally or in writing to the enforcement officer; or

(b) otherwise wilfully obstruct the enforcement officer.

Inspections

51. (1) For the purpose of ensuring compliance with any provision of this Act, the regulations or an emergency order, an enforcement officer may, subject to subsection (3), at any reasonable time enter and inspect any place in which the officer believes, on reasonable grounds, there is any thing to which the provision applies or any document relating to its administration, and the enforcement officer may

(a) open or cause to be opened any container that the enforcement officer believes, on reasonable grounds, contains any such thing or document;

(b) inspect the thing and take samples free of charge;

(c) require any person to produce the document for inspection or copying, in whole or in part; and

(d) seize any thing by means of or in relation to which the enforcement officer believes, on reasonable grounds, the provision has been contravened or that the enforcement officer believes, on reasonable grounds, will provide evidence of a contravention.

Conveyance

(2) For the purposes of carrying out the inspection, the enforcement officer may stop a conveyance or direct that it be moved to a place where the inspection can be carried out.

Dwelling-place

(3) The enforcement officer may not enter a dwelling-place except with the consent of the occupant or person in charge of the dwelling-place or under the authority of a warrant.

Warrant

(4) If on ex parte application a justice, as defined in section 2 of the Criminal Code, is satisfied by information on oath that

(a) the conditions for entry described in subsection (1) exist in relation to a dwelling-place,

(b) entry to the dwelling-place is necessary in relation to the administration of this Act or the regulations, and

(c) entry to the dwelling-place has been refused or there are reasonable grounds for believing that entry will be refused, the justice may issue a warrant authorizing the enforcement officer to enter the dwelling-place subject to any conditions that may be specified in the warrant.

Search and seizure without warrant

52. For the purpose of ensuring compliance with this Act, the regulations or an emergency order, an enforcement officer may exercise the powers of search and seizure provided in section 487 of the Criminal Code without a warrant if the conditions for obtaining a warrant exist but, by reason of exigent circumstances, it would not be feasible to obtain the warrant.

Custody of things seized

53. (1) Subject to subsections (2) and (3), if an enforcement officer seizes a thing under this Act or under a warrant issued under the Criminal Code,

(a) sections 489.1 and 490 of the Criminal Code apply; and

(b) the enforcement officer, or any person that the officer may designate, must retain custody of the thing subject to any order made under section 490 of the Criminal Code.

Forfeiture if ownership not ascertainable

(2) If the lawful ownership of or entitlement to the seized thing cannot be ascertained within 30 days after its seizure, the thing, or any proceeds of its disposition, are forfeited to

(a) Her Majesty in right of Canada, if the thing was seized by an enforcement officer employed in the public service of Canada; or

(b) Her Majesty in right of a province, if the thing was seized by an enforcement officer employed by the government of that province.

Perishable things

(3) If the seized thing is perishable, the enforcement officer may dispose of it or destroy it, and any proceeds of its disposition must be

(a) paid to the lawful owner or person lawfully entitled to possession of the thing, unless proceedings under this Act are commenced within 90 days after its seizure; or

(b) retained by the enforcement officer pending the outcome of the proceedings.

Abandonment

(4) The owner of the seized thing may abandon it to Her Majesty in right of Canada or a province.

Disposition by responsible minister

54. Any thing that has been forfeited or abandoned under this Act is to be dealt with and disposed of as the responsible minister may direct.

Liability for costs

55. The lawful owner and any person lawfully entitled to possession of any thing seized, abandoned or forfeited under this Act are jointly and severally liable for all the costs of inspection, seizure, abandonment, forfeiture or disposition incurred by Her Majesty in excess of any proceeds of disposition of the thing that have been forfeited to Her Majesty under this Act.

Application for investigation

56. (1) A person, other than a corporation, who is resident in Canada and at least 18 years of age may apply to the responsible minister for an investigation of whether an alleged offence has been committed or whether anything directed towards its commission has been done.

Statement to accompany application

(2) The application must be in a form approved by the responsible minister and must include a solemn affirmation or declaration containing

(a) the name and address of the applicant;

(b) a statement that the applicant is at least 18 years old and a resident of Canada;

(c) a statement of the nature of the alleged offence and the name of each person alleged to be involved;

(d) a summary of the evidence supporting the allegations;

(e) the names and addresses of each person who might be able to give evidence about the alleged offence, together with a summary of the evidence they might give, to the extent that this information is available to the applicant;

(f) a description of any document or other material that the applicant believes should be considered in the investigation and, if possible, a copy of the document; and

(g) details of any previous contact between the applicant and the responsible minister about the alleged offence.

Investigation

57. (1) The responsible minister must acknowledge receipt of the application and must investigate all matters that he or she considers necessary to determine the facts relating to the alleged offence.

Frivolous or vexatious applications

(2) No investigation is required if the responsible minister decides that the application is frivolous or vexatious.

Notice of decision

(3) If the responsible minister decides not to conduct the investigation, he or she must, within 60 days after the application for investigation is received, give notice of the decision, including the justification, to

(a) the applicant; and

(b) each person alleged in the application to have been involved in the commission of the offence for whom an address is given in the application.

When notice need not be given

(4) The responsible minister need not give the notice if an investigation in relation to the alleged offence is ongoing apart from the application.

Progress reports

58. (1) After acknowledging receipt of the application, the responsible minister must report to the applicant every 90 days on the progress of the investigation and the action, if any, that the responsible minister has taken or proposes to take, but a report is not required if the investigation is suspended or concluded before the end of the 90 days.

Responsible minister may send evidence to Attorney General

(2) At any stage of the investigation, the responsible minister may send any documents or other evidence to the Attorney General for consideration of whether an offence has been or is about to be committed, and for any action that the Attorney General may wish to take.

Suspension or conclusion of investigation

59. (1) The responsible minister may suspend or conclude the investigation if he or she is of the opinion that

(a) the alleged offence does not require further investigation; or

(b) the investigation does not substantiate the alleged offence or any other offence.

Report if investigation suspended

(2) If the investigation is suspended, the responsible minister must

(a) prepare a written report describing the information obtained during the investigation and stating the reasons for its suspension and the action, if any, that the responsible minister has taken or proposes to take;

(b) send a copy of the report to the applicant; and

(c) notify the applicant if the investigation is subsequently resumed.

Report when investigation concluded

(3) When the investigation is concluded, the responsible minister must

(a) prepare a written report describing the information obtained during the investigation and stating the reasons for its conclusion and the action, if any, that the responsible minister has taken or proposes to take; and

(b) send a copy of the report to the applicant and to each person whose conduct was investigated.

A copy of the report sent to a person whose conduct was investigated must not disclose the name or address of the applicant or any other personal information about them.

When report need not be sent

(4) If another investigation in relation to the alleged offence is ongoing apart from the application, the responsible minister need not send copies of a report described in subsection (2) or (3) until the other investigation is suspended or concluded.

ENDANGERED SPECIES PROTECTION ACTION

Circumstances in which a person may bring an action

60. (1) A person who has applied for an investigation may bring an endangered species protection action if

(a) the responsible minister has decided not to conduct the investigation and has given a justification for the decision that is not reasonable;

(b) the responsible minister has, without giving notice required by subsection 57(3), not conducted and reported on the investigation within a reasonable time;

(c) the responsible minister's reasons for suspending or concluding the investigation are unreasonable; or

(d) the responsible minister's response to the investigation is unreasonable.

Nature of the action

(2) The action may be brought in any court of competent jurisdiction against a person who committed, or has done anything directed towards the commission of, an offence that

(a) was alleged in the application for the investigation; and

(b) caused or will cause significant harm to a listed endangered or threatened species or its critical habitat.

Relief that may be claimed

(3) In the action, the person may claim any or all of the following:

(a) a declaratory order;

(b) an order, including an interlocutory order, requiring the defendant to refrain from doing anything that, in the opinion of the court, may constitute or be directed towards an offence;

(c) an order, including an interlocutory order, requiring the defendant to do anything that, in the opinion of the court, may prevent an offence;

(d) an order to the parties to negotiate corrective measures with respect to the significant harm resulting from the offence and to report to the court on the negotiations within a time set by the court; and

(e) any other appropriate relief, including the costs of the action, but not including damages.

Limitation period of two years

61. (1) An endangered species protection action may be brought only within a limitation period of two years beginning when the plaintiff becomes aware of the conduct on which the action is based, or should have become aware of it.

Time during investigation not included

(2) The limitation period does not include any time following the plaintiff's application for an investigation, but before the plaintiff receives a report under subsection 59(2) or (3).

No action for remedial conduct

62. An endangered species protection action may not be brought if the alleged conduct was or will be

(a) taken to protect a listed endangered or threatened species or its habitat or to protect the environment, national security, safety or health, including animal and plant health; and

(b) reasonable and consistent with public safety.

Notice of the action

63. (1) The plaintiff in an endangered species protection action must give notice of the action in the public registry no later than ten days after the document originating the action is first served on a defendant.

Notice of other matters

(2) The court may order any party to the action to give notice in the public registry of any other matter relating to the action.

Attorney General to be served

64. (1) A plaintiff must serve the Attorney General with a copy of the document originating an endangered species protection action within ten days after first serving the document on a defendant.

Attorney General may participate

(2) The Attorney General is entitled to participate in the action, either as a party or otherwise. Notice of a decision of the Attorney General to participate must be given to the plaintiff and the public registry within 45 days after the copy of the originating document is served on the Attorney General.

Right of appeal

(3) The Attorney General is entitled to appeal from a judgment in the action and to make submissions and present evidence in an appeal.

Other participants

65. (1) The court may allow any person to participate in an endangered species protection action in order to provide fair and adequate representation of the private and public interests involved, including governmental interests.

Manner and terms of participation

(2) The court may determine the manner and terms of the person's participation, including the payment of costs.

Burden of proof

66. The burden of proof in an endangered species protection action is on a balance of probabilities.

Defence of due diligence

67. (1) The defence of due diligence in complying with this Act, the regulations or an emergency order is available in an endangered species protection action.

Other defences not excluded

(2) This section does not limit the availability of any other defence.

Undertakings to pay damages

68. In deciding whether to dispense with an undertaking to pay damages caused by an interlocutory order, the court in an endangered species protection action may consider any special circumstances, including whether the action is a test case or raises a novel point of law.

Remedies

69. If a court finds that the plaintiff is entitled to judgment in an endangered species protection action, it may grant any relief mentioned in subsection 60(3).

Orders to negotiate corrective measures

70. (1) A court order to negotiate corrective measures with respect to significant harm caused by an offence may include the following measures to the extent that they are reasonable, practical and ecologically sound:

(a) measures for the prevention, reduction or elimination of the harm or the risk of harm;

(b) measures to assist in the recovery of the species involved and its habitat; and

(c) the payment of money by the defendant, as the court may direct to achieve the purposes of the measures.

Before making the order, the court must take into account any efforts that the defendant has already made to deal with the harm or risk of harm.

Other orders

(2) The court may also make interlocutory or ancillary orders to ensure that the negotiation of the corrective measures runs smoothly, including orders

(a) for the payment of the costs of negotiation;

(b) requiring any party to prepare a draft of the measures; and

(c) setting a time limit for the negotiations.

Appointment of other person to prepare measures

(3) The court may appoint a person who is not a party to prepare draft corrective measures if the parties cannot agree on the measures or the court is not satisfied with the measures that they negotiate.

Order to prepare other measures

(4) The court may order the parties to prepare other corrective measures if it is not satisfied with the measures that they negotiate.

Approval and effective date

(5) The court may approve corrective measures that the parties negotiate or corrective measures prepared by a person appointed under subsection (3) and the approved measures come into effect on a day determined by the court.

Restriction on orders to negotiate corrective measures

71. A court may not order the negotiation of corrective measures if it determines that

(a) the objectives mentioned in paragraphs 70(1)(a) to (c) have already been achieved; or

(b) corrective measures that meet the same objectives have already been ordered under this Act or any other law in force in Canada.

Settlement or discontinuance

72. An endangered species protection action may be settled or discontinued only with the approval of the court and on terms that it considers appropriate.

Settlements and orders binding

73. If an endangered species protection action results in a final order of a court or a settlement approved by a court,

(a) the resolution of any question of fact by the order or settlement is binding on a court in any other endangered species protection action in which it arises; and

(b) no other endangered species protection action may be brought with respect to the facts of the offence dealt with by the order or settlement.

Costs

74. In deciding whether to award costs in an endangered species protection action, the court may consider any special circumstances, including whether the action is a test case or raises a novel point of law.

Evidence of offence

75. (1) In an endangered species protection action, the record of proceedings in any court in which the defendant was convicted of an offence is evidence that the defendant committed the offence.

Certificate evidence of conviction

(2) In the action, evidence that a defendant was convicted of an offence may be given by a certificate stating with reasonable particularity the defendant's conviction and sentence.

Signature on certificate

(3) The certificate must be signed by

(a) the judge or other person who made the conviction; or

(b) the clerk of the court in which the conviction was made.

Once it is proved that the defendant is the offender mentioned in the certificate, it is evidence without proof of the signature or the official character of the person appearing to have signed it.

Civil remedies not affected

76. (1) No civil remedy for any conduct is suspended or affected by reason only that the conduct is an offence.

Remedies not repealed, etc.

(2) Nothing in this Act may be interpreted so as to repeal, remove or reduce any remedy available to any person under any law in force in Canada.

OFFENCES AND PUNISHMENT

Contraventions

77. (1) Every person who contravenes section 31 or 32 or any prescribed provision of a regulation or an emergency order

(a) is guilty of an offence punishable on summary conviction and is liable

(i) in the case of a corporation, to a fine not exceeding $100,000, and

(ii) in the case of any other person, to a fine not exceeding $50,000 or to imprisonment for a term not exceeding one year, or to both; or

(b) is guilty of an indictable offence and is liable

(i) in the case of a corporation, to a fine not exceeding $500,000, and

(ii) in the case of any other person, to a fine not exceeding $250,000 or to imprisonment for a term not exceeding five years, or to both.

A regulation or emergency order may prescribe which of its provisions may give rise to an offence.

Subsequent offence

(2) If a person is convicted of an offence a second or subsequent time, the amount of the fine for the subsequent offence may, despite subsection (1), be double the amount set out in that subsection.

Continuing offence

(3) A person who commits or continues an offence on more than one day is liable to be convicted for a separate offence for each day on which the offence is committed or continued.

Fines cumulative

(4) A fine imposed for an offence involving more than one animal, plant or other organism may be calculated in respect of each one as though it had been the subject of a separate information and the fine then imposed is the total of that calculation.

Additional fine

(5) If a person is convicted of an offence and the court is satisfied that monetary benefits accrued to the person as a result of the commission of the offence,

(a) the court may order the person to pay an additional fine in an amount equal to the court's estimation of the amount of the monetary benefits; and

(b) the additional fine may exceed the maximum amount of any fine that may otherwise be imposed under this Act.

Officers, etc., of corporations

78. If a corporation commits an offence, any officer, director or agent of the corporation who directed, authorized, assented to, or acquiesced or participated in, the commission of the offence is a party to and guilty of the offence and is liable on conviction to the punishment provided for the offence, whether or not the corporation has been prosecuted or convicted.

Offences by employees or agents

79. In any prosecution for an offence, it is sufficient proof of the offence to establish that it was committed by an employee or agent of the accused, whether or not the employee or agent is identified or has been prosecuted for the offence.

Defence of due diligence

80. No person may be found guilty of an offence if the person establishes that they exercised all due diligence to prevent its commission.

Venue

81. A prosecution for an offence may be instituted, heard and determined in the place where

(a) the offence was committed;

(b) the subject-matter of the prosecution arose;

(c) the accused was apprehended; or

(d) the accused happens to be, or is carrying on business.

Forfeiture

82. (1) If a person is convicted of an offence, the convicting court may, in addition to any punishment imposed, order that any seized thing by means of or in relation to which the offence was committed, or any proceeds of its disposition, be forfeited to Her Majesty.

Return if no forfeiture ordered

(2) If the convicting court does not order the forfeiture, the seized thing, or the proceeds of its disposition, must be returned to its lawful owner or the person lawfully entitled to it.

Retention or sale

83. If a fine is imposed on a person convicted of an offence, any seized thing, or any proceeds of its disposition, may be retained until the fine is paid or the thing may be sold in satisfaction of the fine and the proceeds applied, in whole or in part, in payment of the fine.

Orders of court

84. If a person is convicted of an offence, the court may, in addition to any punishment imposed and having regard to the nature of the offence and the circumstances surrounding its commission, make an order containing one or more of the following prohibitions, directions or requirements:

(a) prohibiting the person from doing any act or engaging in any activity that could, in the opinion of the court, result in the continuation or repetition of the offence;

(b) directing the person to take any action that the court considers appropriate to remedy or avoid any harm to any wildlife species that resulted or may result from the commission of the offence;

(c) directing the person to publish, in any manner that the court considers appropriate, the facts relating to the commission of the offence;

(d) directing the person to pay a responsible minister or the government of a province an amount for all or any of the cost of remedial or preventive action taken, or to be taken, by or on behalf of the responsible minister or that government as a result of the commission of the offence;

(e) directing the person to perform community service in accordance with any conditions that the court considers reasonable;

(f) directing the person to submit to the responsible minister, on application to the court by the responsible minister within three years after the conviction, any information about the activities of the person that the court considers appropriate;

(g) requiring the person to comply with any other conditions that the court considers appropriate for securing the person's good conduct and for preventing the person from repeating the offence or committing other offences; and

(h) directing the person to post a bond or pay into court an amount of money that the court considers appropriate for the purpose of ensuring compliance with any prohibition, direction or requirement under this section.

Suspended sentence

85. (1) If a person is convicted of an offence and the court suspends the passing of sentence under paragraph 731(1)(a) of the Criminal Code, the court may, in addition to any probation order made under that Act, make an order containing one or more of the prohibitions, directions or requirements mentioned in section 84.

Imposition of sentence

(2) If the person does not comply with the order or is convicted of another offence, within three years after the order is made, the court may, on the application of the prosecution, impose any sentence that could have been imposed if the passing of sentence had not been suspended.

Limitation period

86. (1) Proceedings by way of summary conviction in respect of an offence may be commenced at any time within, but not later than, two years after the day on which the subject-matter of the proceedings became known to the responsible minister.

Responsible minister's certificate

(2) A document appearing to have been issued by the responsible minister, certifying the day on which the subject-matter of any proceedings became known to the responsible minister, is admissible in evidence without proof of the signature or official character of the person appearing to have signed the document and is proof of the matter asserted in it.

References to the responsible minister

(3) A reference to the responsible minister in this section includes a provincial minister if

(a) the responsible minister has delegated responsibility for the enforcement of this Act, the regulations or an emergency order to the provincial minister; and

(b) the offence is alleged to have been committed in that province.

ALTERNATIVE MEASURES

When alternative measures may be used

87. (1) Alternative measures may be used to deal with a person alleged to have committed an offence, but only if it is not inconsistent with the purposes of this Act to do so and the following conditions are met:

(a) the measures are part of a program of alternative measures authorized by the Attorney General, after consultation with the responsible minister;

(b) an information has been laid in respect of the offence;

(c) the Attorney General, after consulting with the responsible minister, is satisfied that the measures would be appropriate, having regard to the nature of the offence and the circumstances surrounding its commission and the following factors, namely,

(i) the protection of species at risk,

(ii) the person's history of compliance with this Act,

(iii) whether the offence is a repeated occurrence,

(iv) any allegation that information is being or was concealed or other attempts to subvert the purposes and requirements of this Act are being or have been made, and

(v) whether any remedial or preventive action has been taken by or on behalf of the person in relation to the offence;

(d) the person fully and freely consents to participate in the alternative measures after having been informed of them;

(e) the person and the Attorney General have concluded an agreement respecting the alternative measures within 180 days after the person has, with respect to the offence,

(i) been served with a summons,

(ii) been issued an appearance notice, or

(iii) entered into a promise to appear or a recognizance;

(f) before consenting to participate in the alternative measures, the person has been advised of the right to be represented by counsel;

(g) the person accepts responsibility for the act or omission that forms the basis of the offence;

(h) there is, in the opinion of the Attorney General, sufficient evidence to proceed with the prosecution of the offence; and

(i) the prosecution of the offence is not barred at law.

Restriction on use

(2) Alternative measures must not be used to deal with a person who

(a) denies participation or involvement in the commission of the alleged offence; or

(b) expresses the wish to have any charge against them dealt with by the court.

Admissions not admissible in evidence

(3) No admission, confession or statement accepting responsibility for a given act or omission made by a person as a condition of being dealt with by alternative measures is admissible in evidence against the person in any civil or criminal proceedings.

Dismissal of charge

(4) A court must dismiss a charge laid against a person in respect of an offence if alternative measures have been used to deal with the person in respect of the alleged offence and

(a) the court is satisfied on a balance of probabilities that the person has totally complied with the agreement; or

(b) the court is satisfied on a balance of probabilities that the person has partially complied with the agreement and, in the opinion of the court, the prosecution of the charge would be unfair, having regard to the circumstances and the person's performance with respect to the agreement.

No bar to proceedings

(5) The use of alternative measures to deal with a person is not a bar to proceedings against them under this Act.

Laying of information, etc.

(6) This section does not prevent any person from laying an information, obtaining the issue or confirmation of any process, or proceeding with the prosecution of any offence, in accordance with law.

Terms and conditions in agreement

88. (1) An alternative measures agreement may contain any terms and conditions, including, but not limited to,

(a) terms and conditions having any or all of the effects set out in section 84 or any other terms and conditions having any of the effects prescribed by regulations that the Attorney General, after consultation with the responsible minister, considers appropriate; and

(b) terms and conditions relating to the costs associated with ensuring compliance with the agreement.

Supervision of compliance

(2) Any governmental or non-governmental organization may supervise compliance with the agreement.

Duration of agreement

89. An alternative measures agreement comes into effect on the day on which it is concluded or on any later day that is specified in the agreement and continues in effect for a period of not more than three years specified in the agreement.

Filing in court for purpose of public access

90. (1) The Attorney General must consult with the responsible minister before concluding an alternative measures agreement and, subject to subsection (5), must have the agreement filed with the court in which the information was laid within 30 days after the agreement is concluded. The agreement is to be filed as part of the court record of the proceedings to which the public has access.

Reports

(2) A report relating to the administration of, and compliance with, the agreement must be filed with the same court immediately after all the terms and conditions of the agreement have been complied with or the charges in respect of which the agreement was entered into have been dismissed.

Third party information

(3) Subject to subsection (4), if any of the following information is to be part of the agreement or the report, it must be set out in a schedule to the agreement or to the report:

(a) trade secrets of any person;

(b) financial, commercial, scientific or technical information that is confidential information and is treated consistently in a confidential manner by any person;

(c) information the disclosure of which could reasonably be expected to result in material financial loss or gain to any person, or could reasonably be expected to prejudice the competitive position of any person; or

(d) information the disclosure of which could reasonably be expected to interfere with contractual or other negotiations of any person.

Agreement on information to be in schedule

(4) The parties to the agreement must agree on which information that is to be part of the agreement or the report is information that meets the requirements of paragraphs (3)(a) to (d).

How schedule is to be kept secret

(5) The schedule is confidential and must not be filed with the court.

Prohibition of disclosure

(6) The responsible minister must not disclose any information set out in a schedule to the agreement or to the report, except as authorized by section 97 or the *Access to Information Act*.

Filing in public registry

91. The following documents must be included in the public registry:

(a) a copy of each agreement and report filed under section 90 or subsection 93(2); or

(b) a notice that the agreement or report has been filed in court and is available to the public.

Stay of proceedings

92. (1) Despite section 579 of the Criminal Code, the Attorney General must, on filing an alternative measures agreement, stay the proceedings in respect of the alleged offence, or apply to the court for an adjournment of the proceedings, for a period of not more than one year after the expiry of the agreement.

Recommencement of proceedings

(2) Proceedings stayed under subsection (1) may be recommenced without laying a new information or preferring a new indictment, as the case may be, by the Attorney General giving notice of the recommencement to the clerk of the court in which the stay of the proceedings was entered. If no such notice is given within one year after the expiration of the agreement, the proceedings are deemed never to have been commenced.

Application to vary agreement

93. (1) Subject to subsections 90(2) and (3), the Attorney General may vary the terms and conditions of an alternative measures agreement on application by the person bound by the agreement and after consultation with the responsible minister. The Attorney General must be of the opinion that the variation is desirable because of a material change in the circumstances since the agreement was concluded or last varied. The variation may include

(a) decreasing the period for which the agreement is to remain in force; and

(b) by relieving the person of compliance with any condition that is specified in the agreement, either absolutely or partially or for any period that the Attorney General considers desirable.

Filing varied agreement

(2) An agreement that has been varied must be filed in accordance with section 90 with the court in which the original agreement was filed.

Application of provisions dealing with records

94. Sections 95 to 97 apply only in respect of persons who have entered into an alternative measures agreement, regardless of the degree of their compliance with the terms and conditions of the agreement.

Disclosure of information by peace officer or enforcement officer

95. (1) A peace officer or enforcement officer may disclose to any person any information in a record relating to an offence alleged to have been committed by a person, including the original or a copy of any fingerprints or photographs of the person, if it is necessary to disclose the information in the conduct of the investigation of an offence.

Disclosure to insurance company

(2) A peace officer or enforcement officer may also disclose the information to an insurance company for the purpose of investigating a claim arising out of an offence committed or alleged to have been committed by the person to whom the record relates.

Government records

96. (1) The responsible minister, any enforcement officer and any department or agency of a government in Canada with which the responsible minister has entered into an agreement under section 7 may keep records and use information obtained as a result of the use of alternative measures to deal with a person

(a) for the purposes of an inspection under this Act or an investigation of an offence alleged to have been committed by a person;

(b) in proceedings against a person under this Act;

(c) for the purpose of the administration of alternative measures programs; or

(d) otherwise for the administration of this Act.

Private records

(2) Any person or organization may keep records of information obtained by them as a result of supervising compliance with an alternative measures agreement and use the information for the purpose of supervising such compliance.

Disclosure of records

97. (1) A record or information referred to in section 95 or 96 may be made available to

(a) any judge or court for any purpose relating to proceedings relating to offences under this or any other Act committed or alleged to have been committed by the person to whom the record relates;

(b) any peace officer, enforcement officer or prosecutor

(i) for the purpose of investigating an offence under this or any other Act that the person is suspected on reasonable grounds of having committed, or in respect of which the person has been arrested or charged, or

(ii) for any purpose related to the administration of the case to which the record relates;

(c) any member of a department or agency of a government in Canada, or any agent of such a government, that is

(i) engaged in the administration of alternative measures in respect of the person, or

(ii) preparing a report in respect of the person under this Act; or

(d) any other person who is deemed, or any person within a class of persons that is deemed, by a judge of a court to have a valid interest in the record, to the extent directed by the judge, if

(i) the judge is satisfied that the disclosure is desirable in the public interest for research or statistical purposes or in the interest of the proper administration of justice, and

(ii) the person gives a written undertaking not to subsequently disclose the information except in accordance with subsection (2).

Subsequent disclosure for research or statistical purposes

(2) If a record is made available for inspection to any person under paragraph (1)(d) for research or statistical purposes, that person may subsequently disclose information contained in the record, but may not disclose the information in any form that would reasonably be expected to identify the person to whom it relates.

Information, copies

(3) A person to whom a record is authorized to be made available under this section may be given any information contained in the record and may be given a copy of any part of the record.

Evidence

(4) This section does not authorize the introduction into evidence of any part of a record that would not otherwise be admissible in evidence.

Exception for public access to court record

(5) For greater certainty, this section does not apply to an alternative measures agreement, a varied alternative measures agreement or a report that is filed with the court in accordance with section 90.

Information exchange agreements

98. The responsible minister may enter into an agreement with a department or agency of a government in Canada respecting the exchange of information for the purpose of administering alternative measures or preparing a report in respect of a person's compliance with an alternative measures agreement.

Regulations

99. The responsible minister may make regulations respecting the alternative measures that may be used for the purposes of this Act including, but not limited to, regulations respecting

(a) the manner of preparing and filing reports relating to the administration of and compliance with alternative measures agreements;

(b) the types of costs, and the manner of paying the costs, associated with ensuring compliance with alternative measures agreements; and

(c) the terms and conditions that may be included in an alternative measures agreement and the effects of those terms and conditions.

COST RECOVERY

Fees and charges

100. (1) Her Majesty may recover any prescribed fee or charge from any person who requests

(a) an agreement or permit under section 46, or an amendment to, or renewal of, such an agreement or permit; or

(b) access to the public registry or the inclusion of a document in the public registry.

Regulations

(2) The Governor in Council, on the recommendation of the Minister, may make regulations prescribing the fees and charges, or the manner of calculating them.

REPORTS AND REVIEW OF ACT

Annual report to Parliament

101. The Minister must annually prepare a report on the administration of this Act during the preceding calendar year and must have a copy of

the report tabled in each House of Parliament within the first 15 days that it is sitting after the completion of the report.

Reports to Parliament

102. Three years after this section comes into force and at the end of each subsequent period of five years, the Minister must prepare a general report on the status of wildlife species. The Minister must have the report tabled in each House of Parliament within the first 15 days that it is sitting after the completion of the report.

Parliamentary review and report

103. Three years after this section comes into force and at the end of each subsequent period of five years, a committee of the House of Commons, of the Senate or of both Houses of Parliament is to be designated or established for the purpose of reviewing this Act. The committee is to undertake a comprehensive review of the Act as soon as practicable, including a review of the effects of its application, and is to report to Parliament within one year after the review is undertaken or within any additional time that the House of Commons may authorize.

CONDITIONAL AMENDMENTS

Bill C-25

104. If Bill C-25, introduced in the second session of the thirty-fifth Parliament and entitled *An Act respecting regulations and other documents, including the review, registration, publication and parliamentary scrutiny of regulations and other documents, and to make consequential and related amendments to other Acts*, is assented to, then, on the later of the coming into force of section 27 of that Act and section 35 of this Act, section 35 of this Act is replaced by the following:

Regulatory process does not apply

35. Emergency orders are exempt from the application of the regulatory process under the *Regulations Act*, but each order must be published in the Canada Gazette within 23 days after it is made.

Bill C-26

105. If Bill C-26, introduced in the second session of the thirty-fifth Parliament and entitled *An Act respecting the oceans of Canada*, is assented to, then, on the later of the coming into force of

(a) section 4 of that Act and subparagraph (b)(ii) of the definition ``federal land'' in subsection 2(1) of this Act, that subparagraph is replaced by the following:

(ii) the territorial sea of Canada as determined in accordance with the *Oceans Act*, including the seabed and subsoil below and the airspace above that sea,

(b) section 6 of that Act and subparagraph (b)(i) of the definition ``federal land'' in subsection 2(1) of this Act, that subparagraph is replaced by the following:

(i) the internal waters of Canada within the meaning of the *Oceans Act*, including the seabed and subsoil below and the airspace above those waters,

Bill C-62

106. If Bill C-62, introduced in the second session of the thirty-fifth Parliament and entitled *An Act respecting fisheries*, is assented to, then, on the later of the coming into force of section 2 of that Act and the definition ``aquatic species'' in subsection 2(1) of this Act, that definition is replaced by the following:

``aquatic species''

``aquatic species'' means a wildlife species that is a fish, as defined in section 2 of the *Fisheries Act*, or a marine plant, as defined in section 2 of that Act.

COMING INTO FORCE

Order of Governor in Council

107. This Act, or any of its provisions, comes into force on a day or days to be fixed by order of the Governor in Council.

APPENDIX C: THE SURVEY QUESTIONNAIRE

1. Are you one of the operation's principal decision maker(s)?
   ____ yes ____ no
2. Sex
   ____ male ____ female

3. Are you:
   ____ 75 years of age or greater
   ____ 65 to 74 years of age
   ____ 55 to 64 years of age
   ____ 45 to 54 years of age
   ____ 35 to 44 years of age
   ____ 25 to 34 years of age
   ____ 24 years of age or less

4. Do you live
   ____on your operation
   ____population center of less than 1000 people
   ____population center of 1000 to 5000 people
   ____population center of 5000 to 10000 people
   ____population center of 10000 to 20000 people
   ____population center of greater than 20000 people

5. Does your operation raise any livestock other than cattle?
   ____ yes ____ no
   If yes, please specify the type of animals

6. How many head of breeding stock are in your operation's cattle herd?
   ____ less than 20 head
   ____ 20 to 49 head
   ____ 50 to 99 head
   ____ 100 to 149 head
   ____ 150 to 199 head
   ____ 200 to 250 head
   ____ more than 250 head

7. Does your operation background any cattle?
   _____ yes _____ no
   if yes, how many per year?
   _____ less than 20 head
   _____ 20 to 49 head
   _____ 50 to 99 head
   _____ 100 to 149 head
   _____ 150 to 199 head
   _____ 200 to 250 head
   _____ more than 250 head

8. Does your operation finish any cattle?
   _____ yes _____ no
   if yes, how many per year?
   _____ less than 20 head
   _____ 20 to 49 head
   _____ 50 to 99 head
   _____ 100 to 149 head
   _____ 150 to 199 head
   _____ 200 to 250 head
   _____ more than 250 head

9. Does your operation milk any cows?
   _____ yes _____ no
   if yes, how many head of breeding stock?
   _____ less than 20 head
   _____ 20 to 49 head
   _____ 50 to 99 head
   _____ 100 to 149 head
   _____ 150 to 199 head
   _____ 200 to 250 head
   _____ more than 250 head

10. How many acres of **pasture** does your operation **own**?
   _____none
   _____ less than 160 acres
   _____ 160 to 320 acres
   _____ 320 to 640 acres
   _____ 640 to 1280 acres
   _____ 1280 to 1920 acres
   _____ 1920 to 2560 acres
   _____ more than 2560 acres

11. How many acres of **pasture** does your operation **rent**?

_____none
_____ less than 160 acres
_____ 160 to 320 acres
_____ 320 to 640 acres
_____ 640 to 1280 acres
_____ 1280 to 1920 acres
_____ 1920 to 2560 acres
_____ more than 2560 acres

12. How many acres of **forage** does your operation **own**?

_____none
_____ less than 160 acres
_____ 160 to 320 acres
_____ 320 to 640 acres
_____ 640 to 1280 acres
_____ 1280 to 1920 acres
_____ 1920 to 2560 acres
_____ more than 2560 acres

13. How many acres of **forage** does your operation **rent**?

_____none
_____ less than 160 acres
_____ 160 to 320 acres
_____ 320 to 640 acres
_____ 640 to 1280 acres
_____ 1280 to 1920 acres
_____ 1920 to 2560 acres
_____ more than 2560 acres

14. How many acres of **cropland** does your operation **own**?

_____none
_____ less than 160 acres
_____ 160 to 320 acres
_____ 320 to 640 acres
_____ 640 to 1280 acres
_____ 1280 to 1920 acres
_____ 1920 to 2560 acres
_____ more than 2560 acres

15. How many acres of **cropland** does your operation **rent**?
____none
____ less than 160 acres
____ 160 to 320 acres
____ 320 to 640 acres
____ 640 to 1280 acres
____ 1280 to 1920 acres
____ 1920 to 2560 acres
____ more than 2560 acres

16. Did you change the size of your operation's cattle herd or land base in the last five years?
____ yes ____ no; if no go to question 24.

17. Did your operation change the size of your its cattle herd **because** of the elimination of the WGTA grain transportation subsidy?
____ yes ____ no
if yes, by how many head of breeding stock?
____ less than 20 head
____ 20 to 49 head
____ 50 to 99 head
____ 100 to 149 head
____ 150 to 199 head
____ 200 to 250 head
____ more than 250 head
Was the change an ___increase or ___ decrease?

18. Did your operation change its **owned pasture** acreage **because** of the elimination of the WGTA grain transportation subsidy?
____ yes ____ no
if yes, by how many acres?
____ less than 160 acres
____ 160 to 320 acres
____ 320 to 640 acres
____ 640 to 1280 acres
____ 1280 to 1920 acres
____ 1920 to 2560 acres
____ more than 2560 acres
Was the change an ___increase or ___ decrease?

19. Did your operation change its **leased pasture** acreage **because** of the elimination of the WGTA grain transportation subsidy?
    _____ yes _____ no
    if yes, by how many acres?
    _____ less than 160 acres
    _____ 160 to 320 acres
    _____ 320 to 640 acres
    _____ 640 to 1280 acres
    _____ 1280 to 1920 acres
    _____ 1920 to 2560 acres
    _____ more than 2560 acres
    Was the change an ___increase or ___ decrease?

20. Did your operation change its **owned forage** crop acreage **because** of the elimination of the WGTA grain transportation subsidy?
    _____ yes _____ no
    if yes, by how many acres?
    _____ less than 160 acres
    _____ 160 to 320 acres
    _____ 320 to 640 acres
    _____ 640 to 1280 acres
    _____ 1280 to 1920 acres
    _____ 1920 to 2560 acres
    _____ more than 2560 acres
    Was the change an ___increase or ___ decrease?

21. Did your operation change its **leased forage** crop acreage **because** of the elimination of the WGTA grain transportation subsidy?
    _____ yes _____ no
    if yes, by how many acres?
    _____ less than 160 acres
    _____ 160 to 320 acres
    _____ 320 to 640 acres
    _____ 640 to 1280 acres
    _____ 1280 to 1920 acres
    _____ 1920 to 2560 acres
    _____ more than 2560 acres
    Was the change an ___increase or ___ decrease?

22. Did your operation change its **owned cropland** acreage **because** of the elimination of the WGTA grain transportation subsidy?
    _____ yes _____ no
    if yes, by how many acres?
    _____ less than 160 acres
    _____ 160 to 320 acres
    _____ 320 to 640 acres
    _____ 640 to 1280 acres
    _____ 1280 to 1920 acres
    _____ 1920 to 2560 acres
    _____ more than 2560 acres
    Was the change an ___increase or ___ decrease?

23. Did your operation change **leased cropland** acreage **because** of the elimination of the WGTA grain transportation subsidy?
    _____ yes _____ no
    if yes, by how many acres?
    _____ less than 160 acres
    _____ 160 to 320 acres
    _____ 320 to 640 acres
    _____ 640 to 1280 acres
    _____ 1280 to 1920 acres
    _____ 1920 to 2560 acres
    _____ more than 2560 acres
    Was the change an ___increase or ___ decrease?

24. How much does a mile of three strand barbed wire fence cost to construct? $_____

25. Do you insure currently through Canada Saskatchewan Crop Insurance?
    _____ yes _____ no, if no and you have previously carried Crop Insurance what was the last year you insured? 19___

26. Does your operation pasture any of its herd on PFRA community pastures?
    _____ yes _____ no

27. Does your operation pasture any of its herd on Government of Saskatchewan community pastures? _____ yes _____ no

For questions 28 to 57 please use the following scale to indicate the extent to which you agree with the sentiment expressed by the question.

Strongly Disagree	Moderately Disagree	Indifferent	Moderately Agree	Strongly Agree
1	2	3	4	5

28. I know that one or more endangered species **are** present on land that my operation owns or rents.
    Please record a number between 1 and 5 based upon the above scale. _____

29. I know that one or more endangered species **is** present on land that one or more of my neighbors own or rent.
    Please record a number between 1 and 5 based upon the above scale. _____

30. I believe that one or more endangered species **could** be present on land that my operation owns or rents.
    Please record a number between 1 and 5 based upon the above scale. _____

31. I believe that one or more endangered species **could** be present on land that one or more of my neighbors own or rent.
    Please record a number between 1 and 5 based upon the above scale. _____

32. I would invite a convicted poacher to my or my child's wedding.
    Please record a number between 1 and 5 based upon the above scale. _____

33. I would accept an invitation to the wedding of a convicted poacher.
    Please record a number between 1 and 5 based upon the above scale. _____

34. I feel that it is manifestly unfair to expect landowners to bear the costs of protecting endangered species.
    Please record a number between 1 and 5 based upon the above scale. _____

For the remaining questions the words "Bill C-65" will be used to represent Bill C-65 which was titled the **Canada Endangered Species Protection Act.** In any reference to Bill C-65 in the remaining questions I will ask you to assume that Bill C-65 will be reintroduced and passed as it existed when Parliament was prorogued for the last federal election. That is, pretend that the new law the Federal Government is talking about passing will be the same as the last one they tried to pass. Similarly, any reference to the Saskatchewan **Wildlife Act**, should be taken as the endangered species provisions of the current Saskatchewan **Wildlife Act**, or the new Saskatchewan **Wildlife Act**, should it be proclaimed as they are the same in respect to endangered species protection. Please recall that it is the opinion of the Canadian Cattlemen's Association that Bill C-65 could protect habitat on private property, while such protection is not mandated by the **Wildlife Act**.

35. I feel that Bill C-65 will affect land that my operation owns or rents should an endangered species be present on the land.
Please record a number between 1 and 5 based upon the above scale. ____

36. I feel that Bill C-65 will affect land that my neighbors own or rent should an endangered species be present on the land.
Please record a number between 1 and 5 based upon the above scale. _____

37. I feel that the Saskatchewan **Wildlife Act** is less likely to affect land that my operation owns or rents then the Bill C-65.
Please record a number between 1 and 5 based upon the above scale. _____

38. I feel that the Saskatchewan **Wildlife Act** is less likely to affect land that my neighbors own or rent then Bill C-65.
Please record a number between 1 and 5 based upon the above scale. _____

39. I feel that should my neighbors believe it to be in their best interest not to obey Bill C-65 they will not obey it.
Please record a number between 1 and 5 based upon the above scale. _____

40. I feel that should my neighbors believe it to be in their best interest not to obey the Saskatchewan **Wildlife Act** they will not obey it.
Please record a number between 1 and 5 based upon the above scale. _____

Please only respond with one (1) strongly agree or moderately agree for questions 41 through 45.

41. I feel that if a person were to violate the provisions of either Bill C-65 or the Saskatchewan **Wildlife Act** that there is a 1 in 5 chance or greater that they would be convicted.
Please record a number between 1 and 5 based upon the above scale. _____

42. I feel that if a person were to violate the provisions of either Bill C-65 or the Saskatchewan **Wildlife Act** that there is a 1 in 100 chance that they would be convicted.
Please record a number between 1 and 5 based upon the above scale. _____

43. I feel that if a person were to violate the provisions of either Bill C-65 or the Saskatchewan **Wildlife Act** that there is a 1 in 1000 chance that they would be convicted.
Please record a number between 1 and 5 based upon the above scale. _____

44. I feel that if a person were to violate the provisions of either Bill C-65 or the Saskatchewan **Wildlife Act** that there is a less than 1 in 1000 chance that they would be convicted.
Please record a number between 1 and 5 based upon the above scale. _____

45. I would socialize with a neighbor convicted of violating either Bill C-65 or the Saskatchewan **Wildlife Act**.
Please record a number between 1 and 5 based upon the above scale. _____

46. I would prefer to socialize with a neighbor convicted of violating either Bill C-65 or the Saskatchewan **Wildlife Act** over a member of my family who is an urban resident who objects to socializing with my neighbor because of the conviction.
Please record a number between 1 and 5 based upon the above scale. _____

47. I would prefer to socialize with a neighbor convicted of violating either Bill C-65 or the Saskatchewan **Wildlife Act** over a member of my family who is a rural resident, not of my district, who objects to socializing with my neighbor because of the conviction.
Please record a number between 1 and 5 based upon the above scale. _____

48. I would prefer to socialize with a neighbor convicted of violating either Bill C-65 or the Saskatchewan **Wildlife Act** over a member of my family who is a rural resident, of my district, who objects to socializing with our neighbor solely because of the conviction.
Please record a number between 1 and 5 based upon the above scale. _____

49. I do not believe that either the Government of Canada or the Government of Saskatchewan is particularly committed to the protection of endangered species.
Please record a number between 1 and 5 based upon the above scale. _____

50. I do not believe that either the Government of Canada or the Government of Saskatchewan will commit anything beyond minimal resources to the protection of endangered species.
Please record a number between 1 and 5 based upon the above scale. _____

51. I feel that the government employees charged with enforcing either Bill C-65 or the Saskatchewan **Wildlife Act** will go to ridiculous extremes in the performance of their jobs by using dictated rather than cooperative means to settle any disputes that may arise.
Please record a number between 1 and 5 based upon the above scale. _____

52. I like to watch wildlife on land that my operation owns or rents.
Please record a number between 1 and 5 based upon the above scale. _____

53. I like to watch wildlife on land that my neighbors own or rent.
Please record a number between 1 and 5 based upon the above scale. _____

54. I would prefer to see more wildlife on land owned or rented by my operation.
Please record a number between 1 and 5 based upon the above scale. _____

55. I would prefer to see more wildlife on land that my operation owns or rents only if my operation is not solely responsible for the costs associated with the additional wildlife.
Please record a number between 1 and 5 based upon the above scale. _____

56. I am risk adverse that is I do not like to take risks.
Please record a number between 1 and 5 based upon the above scale. _____

57. I am risk neutral that is I am willing to trade risk for reward.
Please record a number between 1 and 5 based upon the above scale. _____

58. For a property tax waiver my operation would be prepared to let
____none of my operation's land base
____worst five percent of my operation's land base
____worst ten percent of my operation's land base
____worst twenty percent of my operation's land base
____worst fifty percent of my operation's land base
____other, please specify in percentage of your operation's land base ____%
return to wildlife habitat.

59. For an annual cash payment of $10.00 per acre my operation would be prepared to let:
____none of my operation's land base
____worst five percent of my operation's land base
____worst ten percent of my operation's land base
____worst twenty percent of my operation's land base
____worst fifty percent of my operation's land base
____other, please specify in percentage of your operation's land base ____%
return to wildlife habitat.

60. For an annual cash payment of $20.00 per acre my operation would be prepared to let
____none of my operation's land base
____worst five percent of my operation's land base
____worst ten percent of my operation's land base
____worst twenty percent of my operation's land base
____worst fifty percent of my operation's land base
____other, please specify in percentage of your operation's land base ____%
return to wildlife habitat.

61. For an annual cash payment of $30.00 per acre my operation would be prepared to let

_____none of my operation's land base
_____worst five percent of my operation's land base
_____worst ten percent of my operation's land base
_____worst twenty percent of my operation's land base
_____worst fifty percent of my operation's land base
_____other, please specify in percentage of your operation's land base _____% return to wildlife habitat.

62. For an annual cash payment of $40.00 per acre my operation would be prepared to let

_____none of my operation's land base
_____worst five percent of my operation's land base
_____worst ten percent of my operation's land base
_____worst twenty percent of my operation's land base
_____worst fifty percent of my operation's land base
_____other, please specify in percentage of your operation's land base _____% return to wildlife habitat.

COMMENTS

PLEASE RECORD ANY ADDITIONAL COMMENTS HERE DO NOT HESITATE

TO ADD AN ADDITIONAL SHEET IF YOU FEEL THE NEED.

THANK YOU

63. I would like a copy of the survey results mailed to me.

____yes ____no
if yes please print you name and address in the space provided below.
Name:_____
Address:_____

64. I would agree to be interviewed to expand on the information contained in this survey. ____yes ____no
if yes please print you name address and telephone number in the space provided below.
Name:_____
Address:_____

Or as above____
Telephone: (306) ____-_____

PLEASE NOTE THAT THIS PAGE WILL BE REMOVED AND FILED SEPARATELY PRIOR TO THE ENCODING OF THE DATA CONTAINED IN THIS SURVEY.

SHOULD YOU NOT DESIRE A COPY OF THE RESULTS OR TO BE INTERVIEWED PLEASE DO NOT HESITATE TO REMOVE THIS PAGE

APPENDIX D: RESPONDENT LOTTERY RESULTS

3	95	183	273	359	457	533	623	695
4	97	185	274	360	458	534	624	697
6	98	186	276	361	459	535	625	699
10	100	188	277	362	461	537	628	703
11	103	190	278	363	462	538	629	704
14	104	192	279	364	463	539	633	708
16	108	196	281	366	464	540	634	710
17	109	197	282	367	465	542	635	711
18	112	201	283	370	467	544	636	
22	114	203	284	371	468	546	637	
24	115	206	285	372	471	548	638	
28	116	207	287	373	472	551	639	
29	117	208	292	375	473	553	640	
30	118	209	293	377	476	555	641	
31	119	212	294	380	482	559	642	
32	120	213	295	383	485	560	643	
33	121	215	296	384	487	562	644	
35	124	216	297	385	490	565	645	
36	129	217	299	387	491	566	646	
38	130	219	301	388	493	567	647	
39	131	222	302	389	494	571	648	
40	133	223	303	393	495	574	649	
41	134	225	304	395	496	575	650	
42	135	226	305	398	497	577	651	
47	137	227	307	401	498	578	652	
49	143	231	309	403	499	587	653	
51	144	233	312	404	501	589	654	
53	145	234	313	405	503	590	656	
54	149	237	314	406	504	591	657	
56	152	238	315	409	506	593	659	
61	155	240	316	414	507	595	660	
62	156	241	317	418	511	596	662	
63	157	242	320	419	512	597	663	
64	158	244	330	422	513	598	664	
65	159	245	333	423	514	600	665	
66	161	250	336	424	515	602	666	
67	164	251	340	427	516	603	670	
68	166	253	341	431	517	607	671	
70	167	254	342	435	518	609	672	
71	169	255	344	437	519	611	673	
72	170	256	345	443	521	612	674	
75	171	257	347	444	522	614	675	
76	172	265	351	445	523	616	677	
80	173	267	352	447	524	617	679	
82	177	268	353	450	525	618	680	
87	179	269	355	451	526	619	681	
90	180	270	356	453	527	620	683	
91	181	271	357	454	529	621	686	
94	182	272	358	455	531	622	691	

APPENDIX E: ADDITIONAL REGRESSION RESULTS

The least squares (LS) dependent variables reported in this appendix are: fair, felon over family member of your district, felon over rural family member, government cares, E1IN5, E1IN1000, and GR1IN1000. Fair is the vector of responses to the question respecting the belief in the fairness of expecting landowners to pay for protecting endangered species. Felon over family member of your district and felon over rural family member, are the responses to the questions that aver a preference to socializing with a neighbor convicted of breaching the Bill or the **Saskatchewan Wildlife Act** over a family member who lives in a rural area or a family member who lives in the same rural area as the respondent who refuses to socialize with the neighbor purely because of the conviction. Government cares, is the vector of the responses to the assertion: "I do not believe that either the Government of Canada or the Government of Saskatchewan is particularly committed to the protection of endangered species". Finally E1IN5, E1IN1000 and GR1IN1000, are the responses to the avowal that the probability of detection is one in five, one in one thousand or greater than one in one thousand respectively. The independent variables were: c, the intercept; age, the age of the respondents; sex, the gender of the respondents; res, how large a population center that the residence of the respondents is located in; herd, the size of the respondents breeding herd; crp, the amount of crop land that the respondents' operations own and rent; and pas, the amount of pasture that the respondents' operations own and rent. The F-statistic is the statistic to test the joint hypothesis that the coefficients of the independent variables a statistically significantly different from zero. While the column headed t-statistic is the

statistic to test the hypothesis that the coefficient of each of the independent variables is statistically significantly different from zero.

Appendix E Table 1 Regression Results with Fair as the Dependent Variable

LS // Dependent Variable is FAIR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.918868	0.770271	6.385896	0
AGE	-0.26012	0.090697	-2.86803	0.0053
SEX	0.895451	0.696665	1.28534	0.2025
RES	-0.22636	0.248549	-0.91072	0.3653
R-squared	0.175307	F-statistic		5.456021
Sample Size: 82		Source: Survey		

Appendix E Table 2 Regression Results with Felon over Family Member of your District as the Dependent Variable

LS // Dependent Variable is FELON OVER FAMILY MEMBER OF YOUR DISTRICT

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.602397	0.53248	8.643325	0
SEX	-1.00132	0.528201	-1.89571	0.0622
CRP	-0.05766	0.045158	-1.27678	0.206
R-squared	0.044658	F-statistic		1.589344
Sample Size: 71		Source: Survey		

Appendix E Table 3 Regression Results with Felon over a Rural Family Member as the Dependent Variable

LS // Dependent Variable is FELON OVER A RURAL FAMILY MEMBER

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.571559	0.532828	8.579807	0
SEX	-0.88296	0.532124	-1.65931	0.1017
CRP	-0.05105	0.042471	-1.20195	0.2336
R-squared	0.037109	F-statistic		1.31033
Sample Size: 71		Source: Survey		

Appendix E Table 4 Regression Results with Government Cares as the Dependent Variable

LS // Dependent Variable is GOVERNMENT CARES

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.595429	0.594765	4.363793	0
AGE	0.07906	0.093917	0.841813	0.4026
HERD	0.127787	0.084708	1.508557	0.1357
CRP	-0.04701	0.051481	-0.91318	0.3642
R-squared	0.057645	F-statistic		1.488509
Sample Size: 77		Source: Survey		

Appendix E Table 5 Regression Results with Gr1IN1000 as the Dependent Variable

LS // Dependent Variable is GR1IN1000

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.905136	0.924532	0.979021	0.3312
SEX	1.039856	0.774759	1.342167	0.1842
RES	0.439915	0.16679	2.63753	0.0104
HERD	0.122803	0.09633	1.274808	0.2069
R-squared	0.079728	F-statistic		1.877097
Sample Size: 70		Source: Survey		

Appendix E Table 6 Regression Results with E1IN5 as the Dependent Variable

LS // Dependent Variable is E1IN5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.364966	0.62307	8.610535	0
RES	-0.56339	0.101352	-5.55872	0
HERD	-0.17208	0.087868	-1.95841	0.0545
CRP	-0.12136	0.048385	-2.50823	0.0146
R-squared	0.168319	F-statistic		4.384978
Sample Size: 70		Source: Survey		

Appendix E Table 7 Regression Results with E1IN1000 as the Dependent Variable

LS // Dependent Variable is E1IN1000

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.615917	0.847219	1.907319	0.0608
SEX	1.100346	0.857052	1.283873	0.2037
RES	0.384083	0.144258	2.662472	0.0097
R-squared	0.058883	F-statistic		2.06473
Sample Size: 70		Source: Survey		

APPENDIX F: AMENDED COST CALCULATIONS

APPENDIX F: TABLE 1 — % Crop and Summerfollow in Project Area by Enterprise and Soil Class

enterprise	wheat		barley		canola		fallow
soil class	smf	stb	smf	stb	smf	stb	
E	0.115	0.321	0.018	0.131	0.1	0.081	0.233
F	0.135	0.323	0.017	0.129	0.095	0.054	0.247
G	0.161	0.325	0.015	0.1	0.089	0.043	0.266
H	0.203	0.298	0.017	0.095	0.067	0.034	0.287
J	0.239	0.267	0.02	0.084	0.053	0.026	0.312
K	0.219	0.261	0.026	0.107	0.054	0.034	0.299
L	0.182	0.295	0.03	0.137	0.056	0.033	0.268
M	0.163	0.272	0.038	0.179	0.059	0.03	0.259
O	0.157	0.273	0.055	0.229	0.024	0.026	0.236
P	0.133	0.164	0.069	0.35	0.03	0.023	0.232

Source Gray et. al. p. 36

APPENDIX F: TABLE 2 — Expected Yields in Project Area by Enterprise and Soil Class

enterprise	wheat		barley		canola	
soil class	smf	stb	smf	stb	smf	stb
E	32.59	26.95	49.96	42.55	24.44	18.45
F	31.72	26.11	48.76	41.29	23.67	17.75
G	30.72	25.14	47.46	40.01	22.82	16.93
H	29.6	24.02	45.82	38.36	21.88	15.96
J	28.3	22.72	43.84	36.37	20.89	14.78
K	26.72	21.11	41.53	34.08	19.78	13.89
L	24.82	19.21	38.86	31.44	18.49	12.54
M	22.55	16.69	35.48	28.04	16.91	11
O	19.58	14	31.28	23.86	14.89	9.06
P	16.5	10.94	26.99	19.56	12.86	6.94

Source Gray et. al. p. 34

APPENDIX F: TABLE 3 **Estimated Cost of Production by Enterprise for Soil Class G**

	fallow	wheat		barley		canola	
		smf	stb	smf	stb	smf	stb
projected input expenses							
seed	0	4.82	5.54	4.96	4.59	6.2	5.89
nitrogen	0	0.02	7.43	0.51	8.77	1.6	12.39
phosphorous	0	4.61	4.41	6.82	4.67	5.09	4.56
other fertilizers	0	0.38	2.12	0.73	1.66	1.03	2.95
herbicides	2.93	12.88	9.78	10.19	9.19	11.61	14.94
insecticides	0	0	0.05	0	0.03	0.65	0.64
hail insurance	0	0.23	0.29	0.3	0.44	0.99	0.44
miscellaneous	0.39	0.53	0.53	1.01	0.4	0.6	0.87
total inputs	**3.32**	**23.47**	**30.15**	**24.52**	**29.75**	**27.77**	**42.68**
equipment and building expenses							
fuel, oil and lubricants	3.85	5.22	5.97	6.19	7.85	5.16	6.78
repairs & maintenance	2.66	5.07	5.34	6.94	7.56	6.48	5.89
miscellaneous	0	0	0.62	0	0.44	0.15	0.28
indirect equipment expenses	0.61	3.38	3.73	2.37	3.55	5.26	4.93
total equipment expenses	**7.12**	**13.67**	**15.66**	**15.5**	**19.4**	**17.05**	**17.88**
other expenses							
labour	5.87	5.87	5.87	5.87	5.87	5.87	5.87
property taxes	2.71	3.23	2.86	4.02	3.6	3.09	3.5
miscellaneous	1.33	5.19	5.83	6.46	5.85	6.2	7.61
operating interest	0.58	2.75	3.19	2.81	3.26	3.14	4
total other costs	**10.49**	**17.04**	**17.75**	**19.16**	**18.58**	**18.3**	**20.98**
total cash costs	**20.93**	**54.18**	**63.56**	**59.18**	**67.73**	**63.12**	**81.54**
depreciation buildings and equip.	6.44	12.86	15.8	12.16	17.93	14.8	16.55
total cash and depreciation costs	**27.37**	**67.04**	**79.36**	**71.34**	**85.66**	**77.92**	**98.09**

Source Gray et. al. p. 37

APPENDIX F: TABLE 4 **Adjusted Total Costs for Acre by Soil Classification**

	fallow	wheat		barley		canola	
		smf	stb	smf	stb	smf	stb
adjusted total costs per acre E soil	27.37	71.12	85.07	75.10	91.10	83.45	106.90
adjusted total costs per acre F soil	27.37	69.22	82.42	73.29	88.40	80.82	102.84
adjusted total costs per acre G soil	27.37	67.04	79.36	71.34	85.66	77.92	98.09
adjusted total costs per acre H soil	27.37	64.60	75.82	68.87	82.13	74.71	92.47
adjusted total costs per acre J soil	27.37	61.76	71.72	65.90	77.87	71.33	85.63
adjusted total costs per acre K soil	27.37	58.31	66.64	62.43	72.96	67.54	80.48
adjusted total costs per acre L soil	27.37	54.16	60.64	58.41	67.31	63.14	72.65
adjusted total costs per acre M soil	27.37	49.21	52.69	53.33	60.03	57.74	63.73
adjusted total costs per acre O soil	27.37	42.73	44.19	47.02	51.08	50.84	52.49
adjusted total costs per acre P soil	27.37	36.01	34.53	40.57	41.88	43.91	40.21

APPENDIX F: TABLE 5 **Adjusted Input Costs per Acre by Soil Classification**

	fallow	wheat		barley		canola	
		smf	stb	smf	stb	smf	stb
adjusted input costs per acre E soil	3.32	24.90	32.32	25.81	31.64	29.74	46.51
adjusted input costs per acre F soil	3.32	24.23	31.31	25.19	30.70	28.80	44.75
adjusted input costs per acre G soil	3.32	23.47	30.15	24.52	29.75	27.77	42.68
adjusted input costs per acre H soil	3.32	22.61	28.81	23.67	28.52	26.63	40.23
adjusted input costs per acre J soil	3.32	21.62	27.25	22.65	27.04	25.42	37.26
adjusted input costs per acre K soil	3.32	20.41	25.32	21.46	25.34	24.07	35.02
adjusted input costs per acre L soil	3.32	18.96	23.04	20.08	23.38	22.50	31.61
adjusted input costs per acre M soil	3.32	17.23	20.02	18.33	20.85	20.58	27.73
adjusted input costs per acre O soil	3.32	14.96	16.79	16.16	17.74	18.12	22.84
adjusted input costs per acre P soil	3.32	12.61	13.12	13.94	14.54	15.65	17.50

APPENDIX F: TABLE 6

Expected Gross Returns GRIP Prices by Soil Classification

	fallow	wheat		barley		canola	
		smf	stb	smf	stb	smf	stb
E	0	132.97	109.96	104.42	88.93	155.68	117.53
F	0	129.42	106.53	101.91	86.30	150.78	113.07
G	0	125.34	102.57	99.19	83.62	145.36	107.84
H	0	120.77	98.00	95.76	80.17	139.38	101.67
J	0	115.46	92.70	91.63	76.01	133.07	94.15
K	0	109.02	86.13	86.80	71.23	126.00	88.48
L	0	101.27	78.38	81.22	65.71	117.78	79.88
M	0	92.00	68.10	74.15	58.60	107.72	70.07
O	0	79.89	57.12	65.38	49.87	94.85	57.71
P	0	67.32	44.64	56.41	40.88	81.92	44.21

APPENDIX F: TABLE 7

Expected Net Return GRIP Prices by Soil Classification

	fallow	wheat		barley		canola	
		smf	stb	smf	stb	smf	stb
E	-27.37	53.55	16.85	20.16	-10.97	63.69	2.53
F	-27.37	51.92	16.10	19.48	-10.86	61.45	2.17
G	-27.37	50.04	15.23	18.76	-10.76	58.97	1.73
H	-27.37	47.95	14.24	17.84	-10.63	56.24	1.23
J	-27.37	45.52	13.08	16.73	-10.46	53.37	0.62
K	-27.37	42.56	11.64	15.42	-10.28	50.14	0.16
L	-27.37	39.00	9.95	13.92	-10.06	46.38	-0.55
M	-27.37	34.75	7.69	12.02	-9.79	41.76	-1.34
O	-27.37	29.17	5.30	9.63	-9.47	35.84	-2.36
P	-27.37	23.36	2.56	7.14	-9.15	29.86	-3.50

APPENDIX F: TABLE 8 **Crop Insurance Premiums**

	wheat		barley		canola	
	smf	stb	smf	stb	smf	stb
E	1.54	1.27	2.4	2.04	1.78	1.34
F	1.52	1.25	2.37	2	1.75	1.3
G	1.5	1.22	2.33	1.96	1.71	1.26
H	1.46	1.18	2.29	1.91	1.67	1.21
J	1.43	1.14	2.24	1.85	1.61	1.14
K	1.39	1.09	2.19	1.78	1.56	1.08
L	1.34	1.03	2.12	1.7	1.51	1.01
M	1.28	0.96	2.04	1.6	1.46	0.92
O	1.23	0.87	1.97	1.49	1.41	0.82
P	1.19	0.78	1.94	1.39	1.39	0.74

Source Gray et. al. p. 35

APPENDIX F: TABLE 9 **Expected Rotation Return**

	fallow	wheat		barley		canola		under
		smf	stb	smf	stb	smf	stb	rotation
E	-6.38	6.16	5.41	0.36	-1.44	6.37	0.59	11.07
F	-6.76	7.01	5.20	0.33	-1.40	5.84	0.54	10.75
G	-7.28	8.06	4.95	0.28	-1.08	5.25	0.46	10.64
H	-7.86	9.73	4.24	0.30	-1.01	3.77	0.35	9.54
J	-8.54	10.88	3.49	0.33	-0.88	2.83	0.19	8.31
K	-8.18	9.32	3.04	0.40	-1.10	2.71	0.05	6.23
L	-7.34	7.10	2.93	0.42	-1.38	2.60	-0.15	4.19
M	-7.09	5.66	2.09	0.46	-1.75	2.46	-0.35	1.49
O	-6.46	4.58	1.45	0.53	-2.17	0.86	-0.56	-1.77
P	-6.35	3.11	0.42	0.49	-3.20	0.90	-0.81	-5.45

APPENDIX F: TABLE 10 **Expected Return 1/3 Crop Share GRIP Prices**

	fallow	wheat		barley		canola		under	landlord	prairie CARE lease		CARE
		smf	stb	smf	stb	smf	stb	rotation	share	rates	difference	% large
E	-0.77	11.47	22.34	1.25	6.35	11.74	5.10	57.48	19.16	27.06	-7.90	41
F	-0.82	13.08	21.71	1.15	6.04	10.78	3.25	55.19	18.40	26.22	-7.82	43
G	-0.88	15.07	20.94	0.98	4.52	9.71	2.46	52.80	17.60	25.25	-7.65	43
H	-0.95	18.26	18.25	1.07	4.08	6.99	1.82	49.52	16.51	24.14	-7.63	46
J	-1.04	20.47	15.37	1.20	3.39	5.26	1.27	45.93	15.31	22.90	-7.59	50
K	-0.99	17.62	13.82	1.47	4.00	5.05	1.55	42.52	14.17	21.41	-7.24	51
L	-0.89	13.50	14.03	1.57	4.64	4.87	1.34	39.06	13.02	19.70	-6.68	51
M	-0.86	10.88	10.98	1.79	5.26	4.66	1.04	33.74	11.25	17.60	-6.35	56
O	-0.78	8.94	8.93	2.23	5.47	1.65	0.71	27.13	9.04	14.96	-5.92	65
P	-0.77	6.22	3.93	2.33	6.37	1.74	0.44	20.26	6.75	12.15	-5.40	80

APPENDIX F: TABLE 11 **Expected Gross Returns Market Prices**

	wheat		barley		canola	
	smf	stb	smf	stb	smf	stb
E	81.48	67.38	62.95	53.61	132.95	100.37
F	79.30	65.28	61.44	52.03	128.76	96.56
G	76.80	62.85	59.80	50.41	124.14	92.10
H	74.00	60.05	57.73	48.33	119.03	86.82
J	70.75	56.80	55.24	45.83	113.64	80.40
K	66.80	52.78	52.33	42.94	107.60	75.56
L	62.05	48.03	48.96	39.61	100.59	68.22
M	56.38	41.73	44.70	35.33	91.99	59.84
O	48.95	35.00	39.41	30.06	81.00	49.29
P	41.25	27.35	34.01	24.65	69.96	37.75

APPENDIX F: TABLE 12 **Expected Returns 1/3 Crop Share Market Prices**

	fallow	wheat		barley		canola		under	landlord	prairie CARE lease		CARE
		smf	stb	smf	stb	smf	stb	rotation	share	rates	difference	% large
E	-0.77	6.33	10.84	0.63	2.61	10.14	4.25	34.03	11.34	27.06	-15.72	139
F	-0.82	7.23	10.57	0.58	2.49	9.33	2.73	32.10	10.70	26.22	-15.52	145
G	-0.88	8.34	10.23	0.49	1.87	8.42	2.07	30.55	10.18	25.25	-15.07	148
H	-0.95	10.13	8.96	0.54	1.70	6.08	1.54	28.00	9.33	24.14	-14.81	159
J	-1.04	11.40	7.59	0.61	1.42	4.59	1.09	25.66	8.55	22.90	-14.35	168
K	-0.99	9.85	6.88	0.75	1.69	4.43	1.34	23.95	7.98	21.41	-13.43	168
L	-0.89	7.60	7.07	0.80	1.99	4.29	1.17	22.03	7.34	19.70	-12.36	168
M	-0.86	6.17	5.64	0.92	2.31	4.13	0.94	19.25	6.42	17.60	-11.18	174
O	-0.78	5.14	4.73	1.17	2.48	1.48	0.67	14.89	4.96	14.96	-10.00	201
P	-0.77	3.65	2.21	1.25	3.05	1.59	0.45	11.42	3.81	12.15	-8.34	219

APPENDIX F: TABLE 13 **Difference Between Prairie Care Lease Rates and a 1/3 Crop Share by Soil Class**

Soil Class	Prairie CARE lease rates	One -third crop share	Difference
E	27.06	27.31	0.25
F	26.22	26.59	0.37
G	25.25	25.80	0.55
H	24.14	24.55	0.41
J	22.90	23.08	0.18
K	21.41	21.48	0.07
L	19.70	21.02	1.32
M	17.60	17.63	0.03
O	14.96	14.91	-0.05
P	12.15	11.5	-0.65

Source Gray et. al. p. 51